CUMULATIVE SOCIO-ECONOMIC IMPACTS ON VENTURA COUNTY FROM OIL AND GAS EXPLORATION AND DEVELOPMENT ACTIVITIES IN THE SANTA BARBARA CHANNEL

COUNTY OF VENTURA
RESOURCE MANAGEMENT AGENCY
PLANNING DIVISION

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INTRODUCTION

There has been no effort, to date, to determine cumulative positive and negative socio-economic impacts from offshore oil and gas exploration and development on Ventura County. The intent of this report, therefore, based on Ventura County's best estimates of new and proposed activities, is to accomplish this by developing an information base from which decisions regarding the potential impacts from new offshore activities can be made. Projections for drilling activities are estimates only based upon information found in existing offshore leasing environmental documents and operator estimates of future development activities. There has been no attempt to predict when or where offshore activity will occur.

This report focuses on cumulative impacts from offshore and onshore oil and gas development because these activities seem the most imminent at this time. When other activities previously identified, such as a coal slurry pipeline or expansion of electricity generating facilities, are closer to actuality, this report may provide the basis for determining their cumulative socio-economic impacts in their environmental reviews.

New exploration and development activities in the Santa Barbara Channel have increased since 1979 and are predicted to continue increasing as tracts leased in OCS Lease Sale #48 and prior lease sales are explored and developed. Proposed Lease Sale #68 exploration and development activities will add to the impacts from this increased activity. It is expected that there will be significant employment and housing impacts from this renewed activity. Ventura County will be the area most impacted by the increased employment and housing needs generated by offshore oil and gas exploration and development activities since Port Hueneme, the support base for these activities, and most support industries are located in Ventura County.

The Ventura County Air Pollution Control District (APCD) has developed a preliminary outline of Petroleum Industry Scenarios (Attachment 1) to project the potential petroleum industry emission inventory. This inventory will be used for the Santa Barbara Channel area air quality modeling effort. These scenarios provide the base data for assumptions made regarding the potential for employment and population impacts resulting from increasing exploration and development activities in the Santa Barbara Channel and vicinity. Increased production activities from the Molino Gas Field, which were not considered in the APCD outline, have been included in this report with estimates for the peak production range the same as those for Platform Habitat (gas) and Santa Rosa Unit (gas) development.

SUMMARY

The following is a summary of both the negative and the positive benefits found in this report.

The cumulative direct employment for pre-lease Sale #48, Lease Sale #48 and proposed Lease Sale #68 indicates that in 1986 as many as 4488 established residents and 2870 new people could be employed in Ventura County as a result of new offshore activities. The new employment could generate a total of 6305 new residents and 2870 new households in the County. However, five years later, new employment alone could drop to 581 new employees, with 1253 new residents, and 581 new households. These uncertain and fluctuating employment prospects makes it difficult for the County and other local agencies to plan for accommodating the influx of people. Additionally, this increase in population is inconsistent with both the 208 Water Quality Management Plan and Air Quality Management Plan adopted population forecasts found in attachments 2 and 3.

Cumulative impacts, both positive and negative, could result from increased offshore development activities. New jobs would be created, some of which would be filled by local residents; however, as offshore employment decreases, a decline in employment could be experienced in the County. New tax revenues would be generated and, although considerable demands would be placed upon local government services, the additional taxes generated might compensate for them. New households generated by increased activity could encourage additional construction industry activity. In turn, greater pressure to increase the continued loss of prime agricultural land could result from the building activity. Increased buying power resulting from increased employment could stimulate the growth of business and light industry in the County and, in turn, related construction activity could impact both the agricultural lands and the ability of local agencies to provide the necessary services needed to meet this growth.

Information found in this report can be used to estimate both the positive and negative impacts which could result from increased offshore development activities.

DISCUSSION

The attached map (Figure 1) shows existing leases, proposed Lease Sale #68 track locations, and field and unit locations for both the Federal Outer Continental Shelf (OCS) and State Tideland and Submerged Lands leasing activity for the Santa Barbara Channel. The Channel has been divided into sections for the Federal OCS and State Tidelands Areas which allows for locating potential activities by general area rather than by specific tract. Since this map was prepared, the State has proposed the preparation of a Draft EIR for State Leasing between Point Conception and Point Arguello in Santa Barbara County. Also, the Pacific OCS Office of the Bureau of Land Management has requested reports from interested agencies regarding proposed Lease Sale #73 Offshore California scheduled for 1983, and there is a proposed Lease Sale #80 Offshore California which may be scheduled for 1984. Activities from these proposed leasing programs have not been included in this analysis.

Scenarios

Estimates of the location and timing of exploration and development (platform placement and drilling) activities in the Channel for each Scenario (Figure 2) are based on : 1) operator estimates; 2) existing offshore development EIR estimates; 3) Lease Sale #48 EIS; and 4) California Office of Planning and Research Report on "Offshore Oil and Gas Development: Southern California 1977". Scenarios A, B, and C correspond to those developed in the APCD Petroleum Industries Scenarios which includes both OCS and tidelands development.

Scenario A includes existing operations and operations in advanced planning stages. Scenario B includes operations expected to result from development of existing leases. Scenario C includes an estimate of operations expected as a result of Lease Sale No. 68. Scenario B includes Scenario A, and Scenario C includes Scenarios A and B. Scenario information on existing leases, unit and field locations and current exploration activities were obtained from the Bureau of Land Management Pacific OCS Office, the Santa Barbara Division of the U.S.G.S., and the Oil and Gas Division of the State Lands Commission. It must be recognized, however, that the Planning Division is only attempting to develop reasonable regional scenarios and is not intending to predict precisely when or where exploration and development will occur.

Unless otherwise indicated in the above sources, new developmental drilling operations are estimated to occur over a three year period, with peak production estimated to be reached during the third year. It is probable that drilling operations may continue after peak production is reached, as is happening in current leasing activity. If this is the case, then the three (3) year estimates for platform placement and developmental drilling will need revision. Consequently, the estimated total workforce, and residential and housing impacts developed in this report will be too low.

In instances where an exploratory or developmental operation lasts less than one year, the impact is assumed to occur for the whole year. Current activity indicates that either more time is needed for drilling, or additional drilling is pursued.

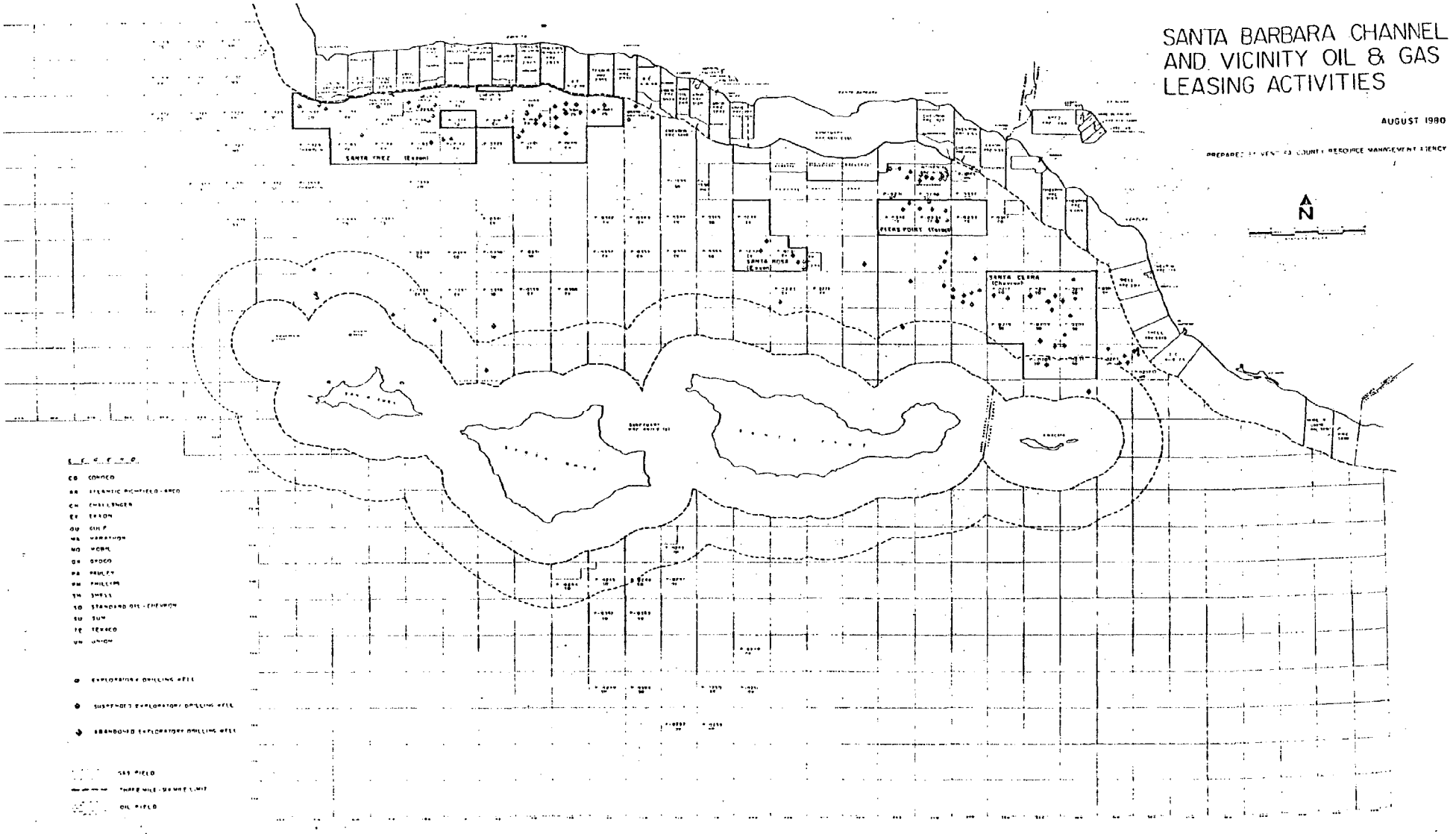
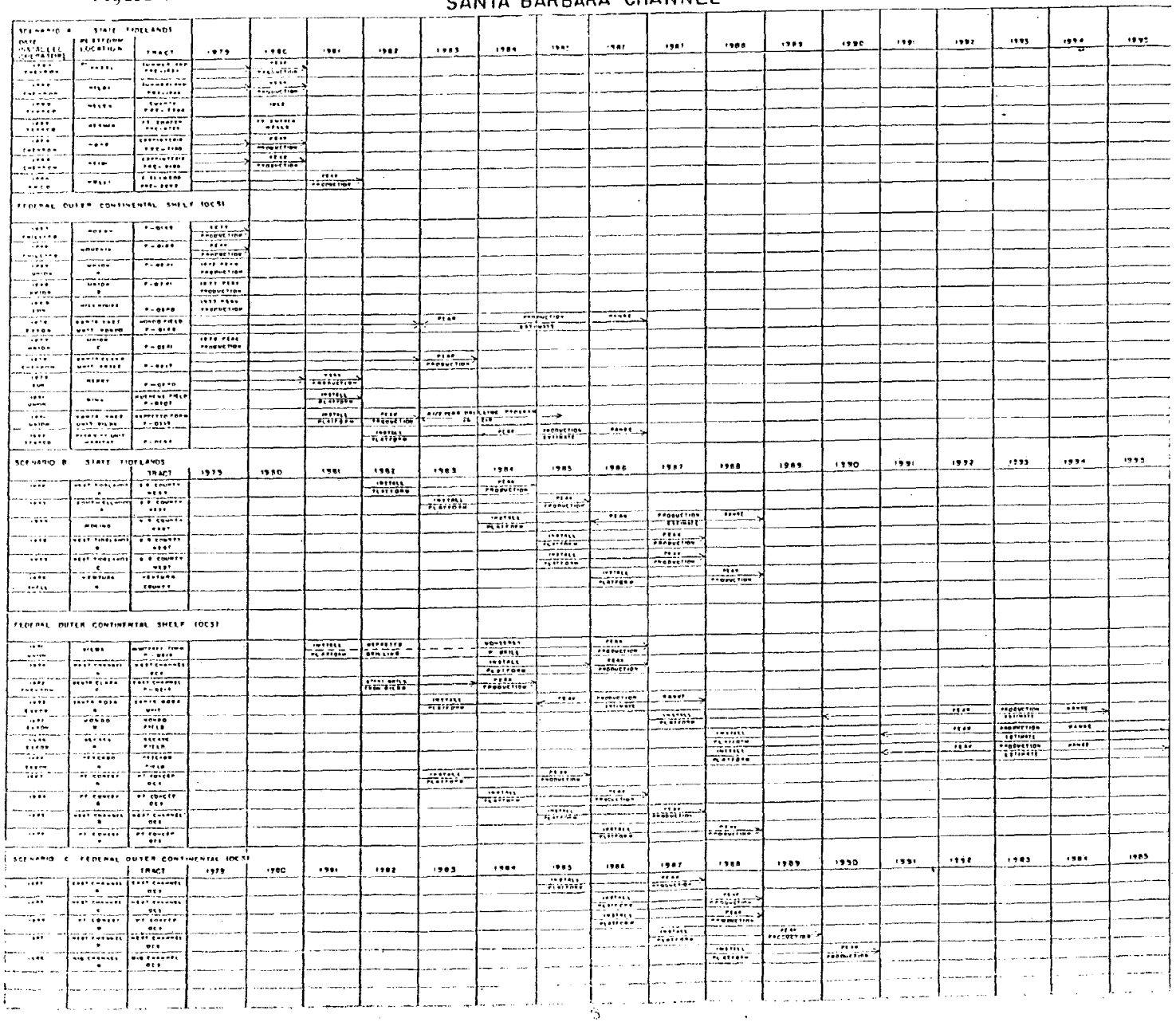

SANTA BARBARA CHANNEL
AND VICINITY OIL & GAS
LEASING ACTIVITIES
AUGUST 1980
N
SANTA CRUZ
SANTA ROSA
SANTA CLARA

Figure 2

DEVELOPMENT ACTIVITIES SCENARIOS
SANTA BARBARA CHANNEL



Source: Resource Management Agency, October 1980, based on APCD Scenario Outline

Forecasts

Table 1 shows both the type and amount of activity for each scenario which either occurred prior to 1979 or, based on Lease Sale #48 estimate, is forecast to occur from 1980 through 1993. The direct employment figures for exploration and pipeline activities are based on estimates found in Volume 1, U.S. Fish and Wildlife Services document Environmental Planning for Offshore Oil and Gas, March 1978. Figure 2 estimates which differ from Table 1 estimates, for continued developmental activity in 1994 and 1995, are based on operator estimates.

Table 2 contains the employment per year estimates for developmental activity in Scenarios A, B, and C. The activity is based on the time lines for the Scenarios found in Figure 2. The average employment per rig (platform), and resulting indirect and induced employment are based on similar calculations found in Volume 2, U.S. Fish and Wildlife Services (FWS) document Environmental Planning for Offshore Oil and Gas, March 1978 (Figure 3). Indirect employment consists of support services, which may be performed by the oil company or contracted to vendors. Induced employment is employment resulting from expenditure of wages earned from direct and indirect employment. Pipe fabrication would provide indirect employment, while schools, hospitals and department stores would provide induced employment. Volume 2 also references two Western Oil and Gas Association studies on the effect of proposed offshore leases on Southern California. The multipliers and percentages from these Southern California specific studies were used to determine the population estimates for both development employment and total exploration (Table 2), and development new resident employment and households (Table 3). Family size for new households were calculated using the yearly family size factor for Ventura County found in "Proposed Population per Household Adjusted to Reflect Department of Finance Forecasts," countywide forecasts prepared September, 1980 by the Ventura County Resource Management Agency (Attachment 4). The total employment for exploration and pipeline activities is based on the following assumptions:

Exploration.

An average of 167 direct employees (estimate ranged from 113 to 212 employees per rig) was used for each rig. One rig is used per each exploratory well. The indirect ratio and induced employment factor are the same as those used to calculate total employment for development activities.

Two exploratory rigs were assumed to be operating during 1980, drilling a minimum of four exploratory wells (a low assumption since three rigs have been working offshore during 1980).

Sample calculations:

334 direct employees (167 per 2 rigs)
67 indirect employment (5:1 ratio)
481 induced employment (1.2 multiplier)
882 total employment/2 rigs

Three exploratory rigs were assumed to be operating during the years 1981-1988, drilling an average of 8 exploratory wells each year.

TABLE 1

EXPLORATION/DEVELOPMENT ACTIVITIES, 1970 - 1993, SANTA BARBARA CHANNEL

	EXPLORATION PHASE			DEVELOPMENT PHASE											
	EXPLORATORY WELLS			WELLS			PLATFORMS			SUBSEA			PIPELINES		
	Scenarios			Scenarios			Scenarios			Scenarios			Scenarios		
Year	A Wells	B Wells	C Wells	A Wells	B Wells	C Wells	A Wells	B Wells	C Wells	A Wells	B Wells	C Wells	A Miles	B Miles	C Miles
Prior To 1970		460					11								
		(9)					(1)								
1976							1		1						
1977				5	7	7	1		1						
1978				15	16	16									
1979				21	25	25	2		2						
1980		2	2	39	44	44							15.4		
1981		5	5	47	61	61	2	2	4				8		
1982		5	5	42	80	81	1	4	5						
1983		5	5	28	85	89		1	1					79	
1984		4	6	20	119	125		4	6	1	1			59	
1985		1	6		97	113		2	3	3	3				
1986		1	6		71	105		1	2	4	4				
1987		1	6		44	85		1	1	4	4				79
1988			4		39	78		2	2	2	3				46
1989			1		30	50				1	4				
1990			1		30	39				1	5				
1991					28					1	5				
					8						2				
1993					8						1				

Source: Resource Management Agency, October 1980

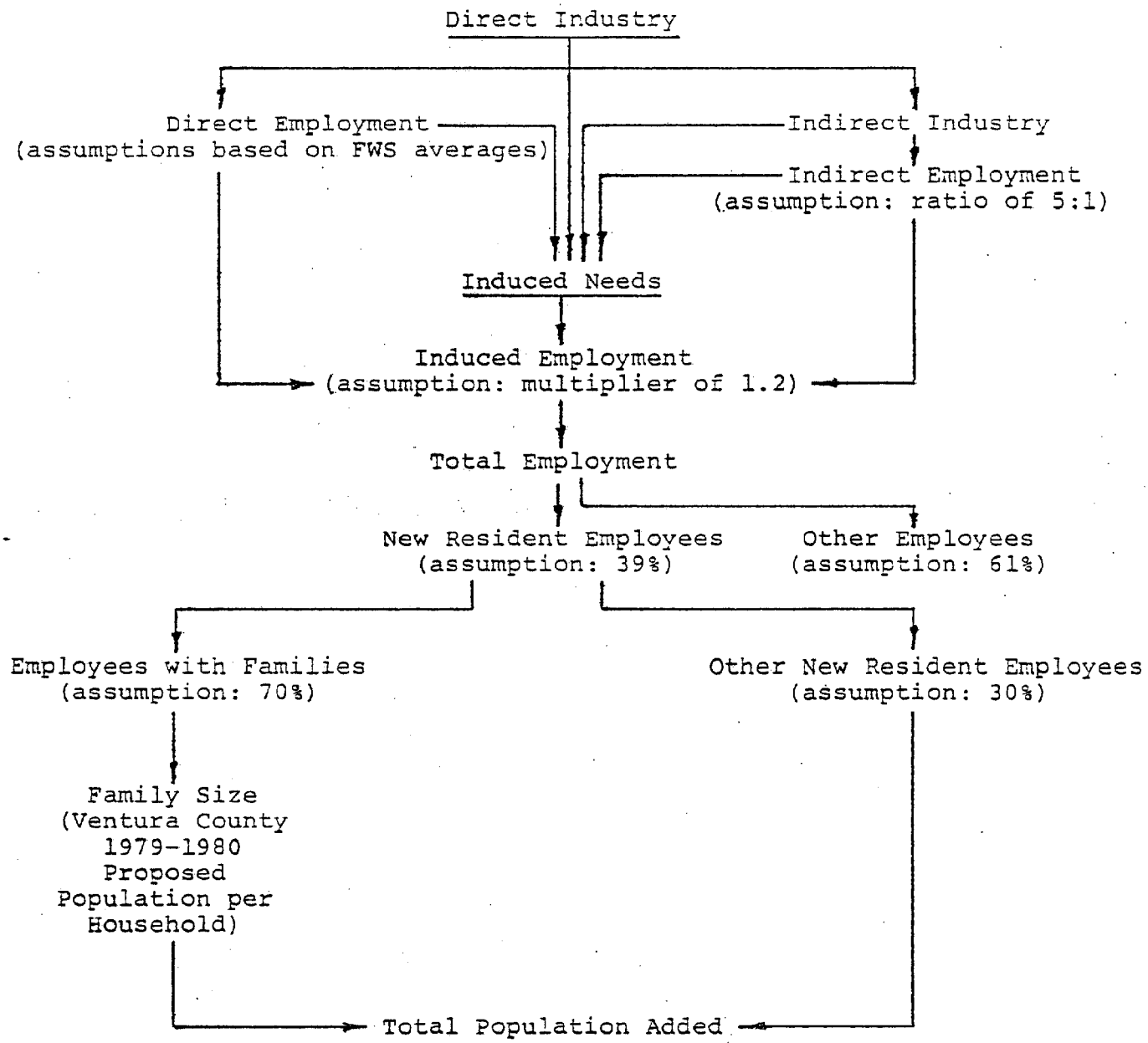
TABLE 2

PLATFORMS, DEVELOPMENT ACTIVITY - EMPLOYMENT PER YEAR BASED ON VOLUMES 1 & 2, U.S. FISH AND WILDLIFE SERVICES ENVIRONMENTAL PLANNING FOR OFFSHORE OIL AND GAS, MARCH 1978

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Scenario A Construction Number of Rigs	10	8	6	4	5	3	2										
Direct Employment (141/Platform/rig)	1410	1128	846	564	705	423	423	282									
Indirect Employment (5:1 ratio)	282	226	169	113	169	85	85	56									
Induced Employment (1.2 multiplier)	2030	1624	1218	812	1218	609	609	806									
Scenario A Rigs Total Employment	3722	2978	2232	1997	2232	1117	1117	744									
Scenario B Number of Rigs	10	8	6	6	9	12	13	12	8	6	3	3	3	3	3	3	2
Direct Employment (141/Platform/rig)	3722	2978	846	846	1269	1592	1833	1692	1128	846	423	423	423	423	423	423	282
Indirect Employment (5:1 ratio)	3722	2978	169	169	254	338	367	338	226	169	85	85	85	85	85	85	56
Induced Employment (1.2 multiplier)	3722	2978	1218	1218	1827	1437	2640	2437	1624	1218	609	609	609	609	609	609	406
Scenario B Rigs Total Employment	3722	2978	2232	2232	3350	4467	4839	4467	2978	2232	1177	1117	1117	1117	1117	1117	744
Scenario C Number of Rigs	10	8	6	6	9	12	14	15	12	10	5	4	3	3	3	3	2
Direct Employment (141/Platform/rig)	3722	2978	2232	2232	3350	4467	1974	2115	1692	1410	705	564	423	423	423	423	282
Indirect Employment (5:1 ratio)	3722	2978	2232	2232	3350	4467	395	423	338	282	141	113	85	85	85	85	56
Induced Employment (1.2 multiplier)	3722	2978	2232	2232	3350	4467	2843	3046	2437	2030	1015	812	609	609	609	609	406
Scenario C Rigs Total Employment /478	3722	2978	2232	2232	3350	4467	5211	5584	4467	3722	1861	1489	1117	1117	1117	1117	744

Source: Resource Management Agency, October 1980

Figure 3. Hypothetical calculation illustrating the steps required to derive total population added.



Adapted from Vol 2, U.S. Fish and Wildlife Services Environmental Planning for Offshore oil and Gas, March 1978

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TABLE 3

EXPLORATION AND DEVELOPMENT ACTIVITY;TOTAL EMPLOYMENT AND TOTAL ADDED POPULATION FOR SCENARIOS A, B, C

Based on Hypothetical Calculations Found in Figure 3

	1979		1980		1981		1982		1983		1984		1985		1986		1987		1988		1989		1990		1991		1992		1993		1994		1995	
Scenario A																																		
Exploration																																		
Pipelines			451		451		451																											
Development	3722		3078		2232		1997		2232		1117		1117		744																			
Total																																		
Employment	3722		3429		2683		2448		2232		1117		1117		744																			
New Others																																		
39% 61%	1452	2270	1337	2092	1046	1637	955	1493	870	1362	436	681	436	681	290	454																		
Families None																																		
30% 30%	1016	436	936	401	733	313	668	287	609	261	305	131	305	131	203	87																		
Family Size	x2.97		x2.93		x2.89		x2.85		x2.81		x2.77		x2.73		x2.71																			
Family Population	3018		3743		2117		1905		1712		843		823		550																			
Total Added																																		
Population	3454		3144		2430		2192		1923		976		944		637																			
Scenario B																																		
Exploration			882		1323		1323		1323		1323		441		441		441																	
Pipeline			451		451		451		451		451		451		451																			
Development	3722		3078		2232		2232		3350		4467		4839		4467		2978		2232		1117		1117		1117		1117		1117		744			
Total																																		
Employment	3722		4311		4006		4006		5124		6241		5731		5359		3419		2232		1117		1117		1117		1117		1117		744			
New Others																																		
39% 61%	1452	2270	1681	2630	1562	2444	1562	2444	1998	3126	2434	3807	2235	3496	3090	3265	1333	2086	870	1362	436	681	436	681	436	681	436	681	436	681	436	681	290	454
Families None																																		
70% 30%	1016	436	1177	504	1094	468	1094	468	1399	599	1704	730	1565	670	1463	627	933	400	609	261	305	131	305	131	305	131	305	131	305	131	305	131	203	87
Family Size	x2.97		x2.93		x2.89		x2.85		x2.81		x2.77		x2.73		x2.71		x2.70		x2.69		x2.67		x2.66		x2.65		x2.64		x2.64		x2.63		x2.62	
Family Population	3018		3449		3161		3118		3931		4920		4273		3965		2520		1638		814		811		808		805		805		802		532	
Total Added																																		
Population	3454		3953		3629		3586		4530		5450		4943		4597		2920		1899		943		942		939		936		936		933		619	
Scenario C																																		
Exploration													1323		1323		1323		1323		441		441											
Pipelines													451		451		451		451															
Development													5311		5364		4467		3722		1861		1489		1489		1489		1489					
Total																																		
Employment													6985		7358		6241		5496		2302		1930		1489		1489		1489					
New Others																																		
31% 61%													2724	4261	2870	4488	2434	3807	2143	3353	898	1404	753	1177	581	908	581	908	581	908				
Families None																																		
70% 30%													1907	817	2009	861	1304	730	1500	643	629	269	527	226	407	174	407	174	407	174				
Family Size	x2.96		x2.93		x2.88		x2.85		x2.81		x2.77		x2.73		x2.71		x2.70		x2.69		x2.67		x2.66		x2.65		x2.64		x2.64		x2.63		x2.62	
Family Population													5206		5444		4601		4036		1678		1402		1079		1075		1075					
Total Added A,B,C /008	3454		3953		3629		5286		4530		5450		6023		6305		5331		4670		1947		1628		1253		1249		1249		933		618	

Source: Resource Management Agency, October 1980

One exploratory rig was assumed to be operating during 1989 and 1990, drilling a minimum of one well each year. A rig operating for part of a year is assumed to operate the full year since exploration activity may be higher than estimated in the Lease Sale #48 EIS.

Pipeline Development

An average of 170 direct employees were used for a pipeline crew (estimate ranged from 160 to 175). One crew was assumed to be operating for each year 1980 through 1988. The indirect ratio and induced factor used to determine total employment are the same as those used to calculate other developmental phase total employment.

AQMP Comparisons

Table 4 compares the projected Ventura County population from the revised Air Quality Management Plan population forecasts, September 15, 1980, (attachment 3) with the projected population increases from Scenarios A, B, and C. Based on these comparisons, Ventura County will have to accomodate population increases ranging from 0.08% to 1.02% greater per year than the adopted population forecasts from 1980 through 1995.

Onshore Activities

When employment for onshore exploration and development activities are added to employment from offshore activities, as shown in Table 5, there is an even greater population impact from oil and gas exploration and development. An increase in onshore activity is now occurring and is projected to continue through future years. Based on information from the Santa Paula Division of Oil and Gas, each year an average of 18 active rigs per month will be employed in drilling activities. Each rig will employ from 20 to 24 employees. Because of crew size variables, an average of 20 crew members (directly employed individuals) was used to determine total employment per year for onshore drilling activities. The indirect ratio and induced factor used in computing offshore employment were used in computing onshore employment.

Calculation:

18 active rigs per year @ 20 crew/rig = 432 direct employees
5:1 ratio for indirect employment = 86 indirect employees
1.2 factor for induced employment = 518 induced employees
1141 employees per year

39% of the employees would be new residents = 696 new resident employment and 696 new households.

Student Population Estimates

An attempt was made to determine student population increases. Unfortunately, the County Schools Office has no countywide student generation factors. Instead, each district uses its own estimates which range from 0.28 per household from the Camarillo/Oxnard area to a high of 0.9 for the Moorpark area, while the national average used in Volume 2 of the Fish and Wildlife Services document previously referenced is 0.75 per household. Thus, for an

TABLE 4
POPULATION AND HOUSEHOLD INCREASES
ON VENTURA COUNTY FROM
SANTA BARBARA CHANNEL OFFSHORE DEVELOPMENT

	Projected Ventura County	Scenario A Added Population	Scenario B Added Population	Scenario C Added Population	Projected Ventura County	Scenario A Added Population	Scenario B Added Population	Scenario C Added Population
		1980				1981		
Population	529,927	3,144	3,953	3,953	548,684	2,430	3,629	3,629
Increase Over Prior Year	23,747	26,891	27,700	27,700	18,757	21,187	22,386	22,386
Percent Increase	4.48	5.07	5.23	5.23	3.42	3.86	4.08	4.08
Additional Household		1,337	1,681	1,681		1,046	1,562	1,562
		1982				1983		
Population	565,697	2,192	3,586	3,586	581,892	1,973	4,530	4,530
Increase Over Prior Year	17,013	19,205	20,599	20,599	16,195	18,168	20,725	20,725
Percent Increase	3.01	3.40	3.64	3.64	2.79	3.20	3.56	3.56
Additional Household		955	1,562	1,562		870	1,998	1,998
		1984				1985		
Population	597,077	976	5,450	5,450	612,266	964	4,943	6,023
Increase Over Prior Year	15,185	16,161	21,265	21,265	15,189	16,153	20,132	21,212
Percent Increase	2.54	2.71	3.56	3.56	2.48	2.84	3.29	3.47
Additional Households		436	2,434	2,434		436	2,235	2,724
		1986				1987		
Population	624,806	637	4,592	6,305	637,472		2,920	5,331
Increase Over Prior Year	12,540	13,177	17,132	18,845	12,666		15,586	17,997
Percent Increase	2.00	2.11	2.74	3.02	1.99		2.45	2.82
Additional Households		290	2,090	2,870			1,333	2,434
		1988				1989		
Population	650,464		1,899	4,679	663,578	945	1,947	
Increase Over Prior Year	12,992		14,891	17,671	13,114	14,059	15,061	
Percent Increase	1.99		2.29	2.72	1.98	2.12	2.27	
Additional Household			870	2,143		436	898	
		1990				1991		
Population	676,706		942	1,628	690,240	939	1,253	
Increase Over Prior Year	13,128		14,070	14,756	13,534	14,473	14,787	
Percent Increase	1.94		2.08	2.10	1.96	2.10	2.14	
Additional Household			436	753		436	581	
		1992				1993		
Population	704,045		936	1,249	71,812	936	1,249	
Increase Over Prior Year	13,805		14,741	15,054	14,081	15,017	15,330	
Percent Increase	1.96		2.09	2.14	1.96	2.09	2.13	
Additional Households			436	581		436	581	
		1994				1995		
Population	732,488		933	933	736,016	619	619	
Increase Over Prior Year	14,362		15,295	15,295	3,528	4,147	4,147	
Percent Increase	1.96		2.09	2.09	0.48	0.56	0.56	
Additional Households			436	436		290	290	

LXd380

Source: Resource Management Agency October 1980

TABLE 5
ONSHORE AND OFFSHORE DEVELOPMENT POPULATION IMPACTS

	Projected Ventura County	Scenario A	Scenario B	Scenario C	Projected Ventura County	Scenario A	Scenario B	Scenario C
		1980				1981		
Onshore Development Population	529,927	1,636	1,636	1,636	548,684	1,616	1,616	1,616
Total Added Population		4,780	5,589	5,589		4,046	5,245	5,245
Increase Over Prior Year	23,742	23,527	29,336	29,336	18,757	22,803	24,002	24,002
Percent Increase	4.48	5.38	5.54	5.54	3.42	4.16	4.38	4.38
Onshore Added Households		696	696	696		696	696	696
Total Added Households		2,033	2,377	2,377		1,742	2,258	2,258
		1982				1983		
Offshore Development Population	565,697	1,597	1,597	1,597	581,892	1,578	1,578	1,578
Total Added Population		3,789	5,183	5,183		3,551	6,108	6,108
Increase Over Prior Year	17,013	20,802	22,196	22,196	16,195	19,746	22,303	22,303
Percent Increase	3.01	3.68	3.92	3.92	2.79	3.39	3.84	3.84
Onshore Added Households		696	696	696		696	696	696
Total Added Households		1,651	2,258	2,258		1,566	2,694	2,644
		1984				1985		
Offshore Development Population	597,077	1,558	1,558	1,558	612,266	1,539	1,539	1,539
Total Added Population		2,534	7,008	7,008		2,503	6,482	7,562
Increase Over Prior Year	15,185	17,719	22,193	22,193	15,184	17,692	21,671	22,751
Percent Increase	2.54	2.97	3.72	3.72	2.48	2.89	3.53	3.72
Onshore Added Households		696	696	696		696	696	696
Total Added Households		1,132	3,130	3,310		1,132	2,931	3,420
		1986				1987		
Onshore Development Population	624,806	1,519	1,519	1,529	637,472		1,524	7,527
Total Added Population		2,166	6,121	7,834			4,449	6,855
Increase Over Prior Year	12,540	14,706	18,661	20,374	12,666		17,110	19,521
Percent Increase	2.00	2.35	2.99	3.26	1.99		2.68	3.06
Onshore Added Households		696	696	696			696	696
Total Added Households		986	2,786	3,566			2,029	3,130
		1988				1989		
Onshore Development Population	650,464		1,519	1,519	663,578		1,509	1,509
Total Added Population			3,418	6,198			2,454	3,456
Increase Over Prior Year	12,992		16,410	19,190	13,114		15,568	16,570
Percent Increase	1.997		2.52	2.95	1.98		2.35	2.50
Onshore Added Households			696	696			696	696
Total Added Households			1,566	2,839			1,132	1,594
		1990				1991		
Offshore Development Population	676,706		1,504	1,504	690,240		1,500	1,500
Total Added Population			2,446	3,132			2,439	2,753
Increase Over Prior Year	13,128		15,574	16,260	13,534		15,973	19,040
Percent Increase	1.94		2.30	2.40	1.96		2.31	2.76
Onshore Added Households			696	696			696	696
Total Added Households			1,132	1,449			1,132	1,277
		1992				1993		
Offshore Development Population	704,045		1,495	1,495	718,126		1,495	1,495
Total Added Population			2,431	2,744			2,431	2,744
Increase Over Prior Year	13,805		16,236	16,549	14,081		16,236	16,549
Percent Increase	1.96		2.31	2.35	1.96		2.31	2.35
Onshore Added Households			696	696			696	696
Total Added Households			1,132	1,277			1,132	1,277
		1994				1995		
Onshore Development Population	732,438		1,490	1,490	736,316		1,485	1,485
Total Added Population			2,423	2,423			2,104	2,104
Increase Over Prior Year	14,362		16,785	16,785	3,528		5,632	5,632
Percent Increase	1.96		2.29	2.29	0.48		0.77	0.77
Onshore Added Households			696	696			696	696
Total Added Households			1,132	1,132			986	986

LX4155
Source: Resource Management Agency October 1980

increase in households of 5531 for 1983, the student population generated by this increase in households could range from a low of 1493 to 3998 students to a high of 4798 students. It is also not possible to predict which districts will be impacted by the student population increases. With this uncertainty, it is almost impossible to predict with any degree of accuracy the impact of offshore oil and gas exploration and development activities on schools in the County. An additional difficulty which County schools are now experiencing is that their enrollment estimates for the current school year (1980-81) are in some instances much too low. In some districts, actual enrollment is almost 500 more students than projected, while other schools are experiencing population decreases. When the uncertainty of current estimates and estimates for offshore oil and gas scenario impacts are combined, County school districts may find it difficult to estimate potential enrollments.

Impacts of Population Increases

The population increases from increased offshore and onshore oil and gas development activities are over and above County adopted population forecasts. These increased population estimates will, in turn, affect a number of existing programs, services, industries and plans in the County. It should be noted that, based on the location of these populations, the degree of impact on the various services, County-wide projections, agriculture, etc. will vary for each area.

Increased population will require housing units over and above those that have been planned for. This could have both positive and negative impacts. Increased housing needs could stimulate the housing industry, generate new employment oportunities and eventually generate increased tax revenues. In turn, greater pressure to increase the continued loss of prime agricultural land could result from increased building activity. Estimates of increased housing unit needs for the offshore and onshore oil and gas activities are found in Tables 4 and 5, on a year by year estimate.

All induced services, which include shopping facilities, medical services, and public agency services will feel the impacts of increased oil and gas development activities. New jobs and construction, and increased utilization of vacant facilities could be generated, on a short term basis, by these increased activities. However, on a long term basis, the transitory nature of these population increases could lead to a "boom then bust" effect on the County. After a few years of high employment, the County could experience a sudden decrease in population, employment and need for services and facilities. Countering this "boom then bust" potential impact would require long-range County-wide planning in conjunction with the cities' planning efforts.

Increased transportation activities, including vehicle miles traveled, will occur with increased population. The resultant increase in emissions associated with transportation activities will in turn affect the air quality of Ventura County.

Providers of potable water, waste management and water related services will be impacted by population increases. Sewage treatment facilities in some areas of the County which are at or near capacity may experience further difficulties.

The Ventura County Agricultural Advisory Committee and County agricultural interests have identified urban runoff as a potentially serious problem. The Committee has indicated that urban runoff currently impacts downstream agricultural operations in certain areas of the County, especially the Oxnard Plain. The construction of additional housing units to serve the needs of increased populations could further impact this problem identified by the County agricultural community.

Port Hueneme Harbor will need to be expanded even without the impact of increased offshore activities. However, land constraints are deterring expansion of the Port facilities.

Conversion of prime agricultural land is an existing problem. This is especially true in areas of the County where the unique combination of prime agricultural land with a temperate climate allows for year round intensive agricultural production. Agriculture in Ventura County, a multimillion dollar a year industry is being impacted by the conversion of existing agricultural acreage to housing and industrial uses.

Although additional resources and services could be impacted by increased population from offshore and onshore oil and gas development activities, the areas identified above seem to be those which will be the most impacted.

CONCLUSIONS

Based on the comparisons of County forecasted yearly population with the population increases from each of the Scenarios, Ventura County may experience estimated yearly population increases ranging from 1.02% (1986) to 0.08% (1995) greater than those now forecasted (Table 4). Although accommodating an additional increase of 0.08% (619 people) for one year may not be difficult, accommodating a population increase of 1.02% (6305 people) for a year could be difficult. The issue of a short term boost to population and the economy followed by a decrease in activity over the long term due to the transitory nature of populations related to oil and gas development activities must also be considered. When onshore development population impacts are included, the estimated population which must be accommodated will range from 1.26% (7834 people) for 1986 to 0.29% (2104 people) for 1995 (Table 5). These population increases are estimates. They could be much higher, but they should not be lower than the Scenario A estimates, since Scenario A includes activities in the advanced planning, or reasonably sure to be completed, stage.

The issue of the County population forecasts being exceeded is of extreme importance to the County. The County population forecasts are part of the adopted federally mandated 208 Water Quality Management Plan and Air Quality Management Plan (AQMP). Population increases from offshore development activities could cause the County to exceed the yearly forecasted population increases. Since it is difficult for the County to accommodate the forecasted population increases, it would be even more difficult for the County to accommodate unaccounted for increases. It should also be noted that, although the Federal Government mandates the forecasts found in the 208 Program and the AQMP, it does not attempt to mitigate offshore development impacts on local areas.

The problems resulting from cumulative impacts, especially those related to population increases, must be adequately addressed in both Federal and State environmental review documents before further offshore leasing programs are developed. It is especially important that cumulative population increases from offshore activities be related to countywide adopted plans and their population forecasts, since Ventura County is required by law to comply with these federally mandated plans. Based on Scenarios A, B and C, further offshore leasing will cause the County to exceed its mandated population forecasts. As a result, the agencies involved will have to determine what measures, if any, can be used to mitigate the population impacts. This report can serve as the basis for estimating potential population impacts from increasing offshore development activities, and hopefully stimulate the development of means to mitigate population impacts from offshore development activities.

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3. United States Department of the Interior, Final Environmental Statement, OCS Sale 48, Volumes 1 - 5

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13. Telephone conversation with Dr. Pinkerton, Assistant Superintendent for County Schools, October 10, 1980.

Preliminary

Petroleum Industry Inventory

Documentation

Scenarios

December, 1980

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ATTACHMENT "1"

4.0 Scenarios

The purpose of this section is to document the scenarios used to develop the future year petroleum industry emission inventory. Three scenarios (A, B, C) are developed. Scenario A includes existing operations and operations in the advanced planning stages. Scenario B adds to Scenario A other operations expecting to result from current leases both in the tidelands and on the OCS. Scenario C adds to Scenario B an estimate of operations expected as a result of Lease Sale No. 68.

These three main scenarios are composed out of six scenario components: an onshore component for Ventura County, two tideland components (A, B), and three OCS components (A, B, C). Current operations in the Ventura County tideland are included in the onshore component for Ventura County. Scenario A is made up from the onshore, tideland A, and OCS A scenarios. Scenario B is made up from Scenario A and tideland B and OCS B scenarios. And Scenario C is made up from Scenario B and the OCS C scenario.

The OCS and tideland scenarios are developed in terms of individual platforms so that the emissions can be assigned to specific locations. It must be recognized, however, that the VCAPCD is only attempting to develop reasonable regional scenarios and does not pretend to know precisely where development will occur. The onshore scenario is developed in terms of the growth and non-growth areas used in VCAPCD's general emission inventory.

Many sources of information were used in developing the scenarios. The major data sources were interviews with the oil companies, discussions with the California Division of Oil and Gas (DOG) and the United States Geological Survey (USGS), the DOG annual reports for 1971 through 1979, the 1977 Office of Planning and Research report "Offshore Oil and Gas Development: Southern California" and the Environmental Impact Statement (EIS) for Lease Sale No. 48 prepared by the Bureau of Land Management (BLM). The final scenarios are, however, the responsibility of the VCAPCD staff.

One of the major problems to be resolved by the VCAPCD staff was how to take into account the effects of Lease Sale No. 48 and Lease Sale No. 68. The only data available to the VCAPCD was the EIS on Lease Sale No. 48. This report projected platform installation, drilling, and production activities that would result from Lease Sale No. 48. In deriving updated projections of the petroleum industry activities resulting from Lease Sale No. 48 (included in OCS Scenario B), the following assumptions were used:

1) Fifty percent of the BLM estimates for the Santa Barbara Channel apply because roughly fifty percent of the leases were sold.

2) The actual time table is about 1 year behind the schedule in the EIS because exploratory drilling has been delayed by the controversy over disposal of drill cuttings.

3) The locations of the platforms can be based on the bid amounts on the leases.

The VCAPCD also used this document to project activities resulting from Lease Sale No. 68 (OCS Scenario C) since it will be similar to Lease Sale No. 48. The following assumptions were used:

1) The remaining 50 percent of the BLM estimates for the Santa Barbara Channel apply because roughly 50 percent of the original Lease Sale No. 48 will be offered in Lease Sale No. 68.

2) The time table for Lease Sale No. 68 can be approximated by adding three years to the time table in the EIS.

3) The locations of the platforms are based on the number of leases being offered in the various areas of the Santa Barbara Channel and on the interest shown in these areas during Lease Sale No. 48.

Tables 4.0-1 through 4.0-5 are a summary of the OCS and tideland scenarios. The individual construction, drilling, production, processing, and crude oil transportation scenarios are presented in Sections 4.1 through 4.5.

4.1 Construction Scenarios

4.1.1 Platform Installation Scenarios

Three OCS platform installation scenarios (A, B, C) and two tideland platform installation scenarios (A, B) are presented in Table 4.1-1 estimating the years in which the platforms will be installed.

4.1.2 Pipeline Installation Scenarios

Three OCS pipeline installation scenarios (A, B, C) and two tideland pipeline installation scenarios (A, B) are presented in Table 4.1-2 estimating the miles of pipeline to be laid for each platform. The miles of pipeline to be laid for each platform was determined by simply estimating the miles from each platform to shore. It was assumed that pipeline installation would take place in the same years that the platform was installed.

4.2 Drilling Scenarios

4.2.1 Onshore Drilling Scenario

An onshore drilling scenario is developed here to estimate drilling activities in Ventura County. A compilation of drilling records from the Department of Oil and Gas (DOG) was made from 1977 through 1979 in terms of footage drilled. Table 4.2-1 presents this data set and then projects future year drilling activities from it.

The following assumptions were made in estimating the future year drilling activities:

SUMMARY

Petroleum Industry Scenarios:

TABLE 4.0-1

OCS Scenario A:

Platform	Location	Date Installed	Date Peak Prod	Production Peak (BOD)	GOR	Type Oil/Gas	Processing Location	Crude Oil Trans-portation
Gina	P0202	1981	1981	6,450	200	Light	Oxnard	Pipeline
Gilda (Repetto)	P0216	1981	1982	18,000	1,000	Light	Oxnard	Pipeline
Grace	P0217	1979	1983	13,000	1,000	Light	Grace/ Carpinteria	Pipeline
Hogan	P0166	1967)	-	-	600	Light	La Conchita	Pipeline
Houchin	P0166	1968)						
Henry	P0240	1979	1981	6,000	600	Light	Mobil-Rincon	Pipeline
Hillhouse	P0240	1969	-	-	400	Light	Mobil-Rincon	Pipeline
Union "A"	P0241	1968)	-	-	400	Light	Mobil-Rincon	Pipeline
Union "B"	P0241	1968)						
Union "C"	P0241	1977	1978	3,600	400	Light	Mobil-Rincon	Pipeline
Habitat (Gas)	P0234	1982	1984-86	N/A	N/A	Sweet Gas	Carpinteria	N/A
Hondo "A"	P0188	1976	1983-86	30,000	1,000	Heavy	OS&T	Tanker

KK:ss/795

SUMMARY

Petroleum Industry Scenarios:

TABLE 4.0-2

OCS Scenario B:

Platform	Location	Date Installed	Date Peak Prod	Production Peak (BOD)	GOR	Type Oil/Gas	Processing Location	Crude Oil Trans-portation
Gilda (Monterey)	P0216	-	1986	8,000	1,000	Heavy	Oxnard	Pipeline
Santa Clara "C"	P0215	1982	1984	10,000	1,000	Light	Platform/ Carpinteria	Pipeline
Santa Rosa "A" (Gas)	P0232	1983	1985-87	N/A	N/A	Sweet	Carpinteria	N/A
Hondo "B"	P0190	1987	1990-94	21,500	1,000	Heavy	Las Flores	Tanker
Sacate "A"	P0193	1988	1991-95	20,000	1,500	Heavy	Las Flores	Tanker
Pescado "A"	P0183	1988	1991-95	20,000	1,500	Heavy	Las Flores	Tanker
West Channel "A"	P0358	1985	1987	10,000	1,000	Heavy	Las Flores	Tanker
West Channel "B"	P0348	1985	1987	10,000	1,000	Heavy	Las Flores	Tanker
Pt. Conception "A"	P0321	1983	1985	10,000	1,000	Heavy	Pt.Conception	Tanker
Pt. Conception "B"	P0318	1984	1986	10,000	1,000	Heavy	Pt.Conception	Tanker
Pt. Conception "C"	P0316	1986	1988	10,000	1,000	Heavy	Pt.Conception	Tanker

KK:ss/830

SUMMARY

Petroleum Industry Scenarios:

TABLE 4.0-3

OCS Scenario C:

Platform	Location	Date Installed	Date Peak Prod	Production Peak (BOD)	GOR	Type Oil/Gas	Processing Location	Crude Oil Trans-portation
East Channel "A"	94 (68)	1985	1987	10,000	1,000	Light	Mobil-Rincon	Pipeline
Mid Channel "A"	30 (68)	1988	1990	10,000	1,000	Heavy	Elwood	Tanker
West Channel "C"	36 (68)	1986	1988	10,000	1,000	Heavy	Las Flores	Tanker
West Channel "D"	37 (68)	1987	1989	10,000	1,000	Heavy	Las Flores	Tanker
Pt. Conception "D"	9 (68)	1986	1988	10,000	1,000	Heavy	Pt.Conception	Tanker

TABLE 4.0-4

Tideland Scenario A:

Platform	Location	Date Installed	Date Peak Prod	Production Peak (BOD)	GOR	Type Oil/Gas	Processing Location	Crude Oil Trans-portation
Heidi	PRC 3150	1965)						
		)	-	-	900	Light	Carpinteria	Pipeline
Hope	PRC 3150	1964)						
Hazel	PRC 1824	1958)						
		)	-	-	3,000	Light	Carpinteria	Pipeline
Hilda	PRC 1924	1960)						
Holly	PRC 3242	1966	1981	18,200	1,100	Light	Elwood	Tanker

KK:ss/733

SUMMARY

Petroleum Industry Scenarios:

TABLE 4.0-5

Tideland Scenario B:

Platform	Location	Date Installed	Date Peak Prod	Production Peak (BOD)	GOR	Type Oil/Gas	Processing Location	Crude Oil Trans-portation
South Elwood "B"	PRC 308	1983	1985	18,000	1,000	Light	Elwood	Tanker
West Tidelands "A"	PRC 2879	1982	1984	10,000	500	Heavy	Pt.Conception	Tanker
West Tidelands "B"	PRC 2725	1985	1987	10,000	1,000	Heavy	Las Flores	Tanker
West Tidelands "C"	PRC 2793	1985	1987	10,000	1,000	Heavy	Las Flores	Tanker
Ventura "A"	PRC 3314	1986	1988	10,000	1,000	Light	Oxnard	Pipeline

TABLE 4.1-1

Platform Installation Scenarios

SCENARIO	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	NOTES
OCS A	Union "C"		Grace Henry		Gina Gilda	Habitat							1, 2
OCS B						Santa Clara "C"	Santa Rosa "A" Point Conception "A"	West Channel "A" Point Conception "B"	West Channel "B"	Point Conception "C"	Honda "B"	Sacate "A" Pescado "A"	3
OCS C									East Channel "A"	West Channel "C" Point Conception "D"	West Channel "D"	Mid Channel "A"	3
TIDELANDS A													
TIDELANDS B						West Tidelands "A"	South Elwood "B"		West Tidelands "B" West Tidelands "C"	Ventura "A"			4

NOTES:

1) Gina/Gilda EIR - Union Oil

2) Habitat - Texaco letter September 5, 1980

3) West Channel (A, B, C, D), Pt. Conception (A, B, C, D), Mid Channel (A), East Channel (A) - BLM Lease Sale 48 EIS

4) West Tidelands "A" - Union Oil EIR (Pt. Conception)

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TABLE 4.1-2

Pipeline Installation Scenarios (miles of pipeline laid)

	PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	NOTES
OCS SCENARIO A:	Gina	P0202					4.5										1
	Gilda	P0216					10										1
	Grace	P0217			10												2
	Henry	P0240			5												
	Union "C"	P0241	5														
	Habitat	P0234						7									
OCS SCENARIO B:	Santa Clara "C"	P0215						5									
	Santa Rosa "A"	P0232							10								
	Hondo "B"	P0190											5				
	Sacate "A"	P0193												5			
	Pescado "A"	P0183												7			
	West Channel "A"	P0358								17							
	West Channel "B"	P0348									15						
	Pt. Conception "A"	P0321							6								
	Pt. Conception "B"	P0318								4							
	Pt. Conception "C"	P0316										7					
OCS SCENARIO C:	East Channel "A"	95 (68)									10						
	Mid Channel "A"	30 (68)												8			
	West Channel "C"	36 (68)										10					
	West Channel "D"	37 (68)											10				
	Pt. Conception "D"	9 (68)										4					
TIDELANDS SCENARIO A:	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TIDELANDS SCENARIO B:	South Elwood "B"	PRC 308							2								
	West Tidelands "A"	PRC 2879						2									
	West Tidelands "B"	PRC 2725									2						
	West Tidelands "C"	PRC 2793									2						
	Ventura "A"	PRC 3314										2					

NOTES:

1) Gina/Gilda EIR - Union Oil

2) Grace - Pipeline Installation EIR, Chevron USA

TABLE 4.2-1

Onshore Drilling Scenario (ft)

RSA/GA/NGA	1977	1978	1979	1980 and future years
RSA 1				
OJAI GA	5,895	14,175	8,707	11,441
OJAI NGA	53,052	86,757	78,367	82,562
SAN BUENAVENTURA GA-(O)	7,465	790	21,873	11,332
SAN BUENAVENTURA GA-(SP)	1,866	198	5,468	2,833
SAN BUENAVENTURA NGA-(B)	1,866	198	5,468	2,833
SAN BUENAVENTURA NGA-(O)	51,935	111,461	118,690	116,076
SAN BUENAVENTURA NGA-(SP)	543	1,002	400	701
SANTA PAULA GA	2,752	4,009	1,600	2,805
SANTA PAULA GA	3,584	8,593	2,000	5,297
TOTAL, RSA 2	128,958	229,183	242,573	235,880
RSA 3				
CAMARILLO NGA	-	895	-	448
OXNARD GA	10,755	53,964	34,712	44,338
OXNARD NGA	-	9,163	4,696	6,930
TOTAL, RSA 3	10,755	64,022	39,408	51,716
RSA 4				
MOORPARK GA	15,005	1,100	-	550
SIMI VALLEY GA	9,020	-	-	-
SIMI VALLEY NGA	3,336	9,835	-	4,918
TOTAL, RSA 4	27,361	10,935	-	5,468
RSA 5	6,007	-	-	-
RSA 6				
FILLMORE NGA	31,576	24,032	40,669	32,351
PIRU NGA	51,392	23,529	930	12,230
TOTAL, RSA 6	82,869	47,561	41,599	44,581
RSA 1 - NORTH HALF	27,558	35,905	35,926	35,916
TOTAL - VENTURA COUNTY	283,607	387,606	359,506	373,561

1) 1980 drilling activities are approximated as the average of 1978 and 1979 drilling activities.

2) Drilling activities past 1980 will remain constant.

4.2.2 OCS and Tideland Drilling Scenarios

Three OCS drilling scenarios (A, B, C) and two tideland scenarios (A, B) are presented here to estimate drilling activity that will occur in the Santa Barbara Channel. The drilling activity is defined in terms of footage drilled.

OCS drilling data from 1975 to the present was obtained from USGS in Los Angeles and the tidelands drilling data from 1975 to 1979 was obtained from DOG in Santa Paula. This information was reviewed to characterize past OCS and tidelands drilling activities. The following assumptions were made in developing the drilling scenarios when no specific information was available:

Exploratory Drilling

1) Drilling Ships or Jack-Up Rigs

   a) Maximum of 3 to 4 rigs available for Santa Barbara Channel
   b) Maximum of 18 to 24 wells per year can be drilled (6 per year per rig)

2) Wells are 10,000 feet deep

3) 4 exploratory wells will be drilled for each future platform

4) 3 year drilling schedule prior to platform installment (1-2-1)

Production Drilling

1) Wells are 10,000 feet deep

2) Number of wells drilled per platform

   a) Use information from similar platform
   b) Use 25 wells

3) 3 year drilling schedule

4) 10 wells drilled per year per rig

5) Drilling corresponds to production estimates

Tables 4.2-2 through 4.2-6 present the three drilling scenarios in terms of yearly footage drilled for each development platform. References are given for each platform when specific information is used to develop the drilling scenarios.

4.3 PRODUCTION SCENARIOS

4.3.1 Onshore Production Scenario

Onshore oil production estimates and forecasts by Ventura County Growth and Non-growth Areas are presented in Table 4.3-1. Future oil production was forecasted by utilizing production decline rates derived through linear regression of historical data.

Onshore gas production estimates and forecasts can be derived from Table 4.3-1 by utilizing the gas/oil ratio (GOR) presented for each area. Gas production information for the West Montalvo gas field is presented separately.

More detailed information concerning the data can be obtained from Table 4.3-1 and the notes to that table.

4.3.2 OCS and Tidelands Production Scenarios

Offshore oil production estimates and forecasts for the Santa Barbara Channel are presented in Tables 4.3-2 to 4.3-7. Table 4.3-2 is a summary of the data presented in Tables 4.3-3 to 4.3-7. Production forecasts for offshore platforms were derived by utilizing a variety of sources: various environmental documents, information from oil company representatives, and the 1977 OPR report, "Offshore Oil and Gas Development: Southern California". Forecasts for production from facilities other than platforms were developed by utilizing decline rates derived through linear regression of historical data.

Gas production forecasts can be derived from Tables 4.3-3 to 4.3-7 by utilizing the gas oil ratios presented in those tables. Gas production information for gas fields is listed separately.

More detailed information can be obtained from the tables and the notes to the tables.

4.4 Processing Scenarios

Processing of oil and gas from onshore operations in general takes place at or near the site where the oil and gas are produced. Oil and gas produced on offshore platforms may be partially processed on the platform and partially processed onshore. When no other information is available, it will be assumed that gas is dried and compressed on the platform and further compressed onshore. All acid gas treatment is assumed to occur onshore. Heat treating of crude oil is assumed to occur on platforms in some cases and onshore in other cases. (See Table 4.4-1). All onshore processing locations are assumed to have access to either a pipeline or a marine terminal. All crude oil storage is assumed to occur at processing locations.

TABLE 4.2-2

OCS Drilling Scenario A

Units: 1000 ft.

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	NOTES
Gina	P0202	-	-	-	-	100	20											1
Gilda (Rupetta)	P0216	-	-	16E	-	170	170	80	40	40								1,2
Grace	P0217	-	-	39E	10E,70	100	100	30										2,3
Hogan	P0166	14	35	8	-													2
Houchin	P0160	-	-	31	19													2
Henry	P0240	5	-	-	25	25												2,4
Hillhouse	P0240	4	-	-	-													2
Union "A"	P0241	2	2	2	-	30	30											2,7
Union "B"	P0241	2	5	4	-	30	30											2,7
Union "C"	P0241	37	5	9	-													2
Habitat (gas)	P0234	7E	25E	-	30E	10E	100	100	40									2,5
Hondo "A"	P0188	9	68	34	30	100												2,6

E-EXPLORATORY

NOTES:

1) Union Oil Gina/Gilda EIR - Gina 13 months drilling, Gilda 4-1/2 years drilling
2) Pre-August 1980 data obtained from USGS - LA Office (public information)
3) Grace (30 wells)
4) Henry - 5000 ft wells (USGS data)
5) Habitat (24 wells)
6) Hondo "A" (28 wells)
7) Union Oil "Miocene" formation - Letter to VCAPCD, October 3, 1980 (assume 12 wells)

TABLE 4.2-3

OCS Drilling Scenario B

Units: 1000 ft.

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	NOTES
Gilda (Monterey)	P0216	-	-	-	-	-	-	40E	130	130	130							1
Santa Clara "C"	P0215	-	-	-	20E	20E	100	100	10E,80	10E	10E	10E						2,6
Santa Rosa "A" (Gas)	P0232	16E	11E	35E	20E	10E	10E	130	100	40	-							3
Hondo "B"	P0190	-	-	-	-	-	-	-	10E	30E	10E	70	70	70	70			4,5,6
Sacate "A"	P0193	-	-	-	-	-	-	-	-	10E	20E	10E	70	70	70	70		4,5
Pescado "A"	P0183	-	-	-	-	-	-	-	-	10E	20E	10E	70	70	70	70		4,5
West Channel "A"	P0358	-	-	-	-	10E	20E	10E	100.	100	90							6
West Channel "B"	P0348	-	-	-	-	-	10E	20E	10E	100	100	80						6
Pt. Conception "A"	P0321	-	-	-	10E	20E	10E	10E,100	100	90								6
Pt. Conception "B"	P0313	-	-	-	-	10E	20E	10E	10E,100	100	80							6
Pt. Conception "C"	P0316	-	-	-	-	-	-	10E	20E	10E	10E,100	100	80					6

E - EXPLORATORY

NOTES:

1) Union Oil Gina/Gilda EIR - 13,000 ft wells
2) Similar to Platform Grace (28 wells)
3) Similar to Platform Habitat (24 wells)
4) Similar to Platform Hondo (28 wells)
5) 4 year drilling schedule
6) BLM Lease Sale 48 EIS - one-half of estimates for S.B. Channel (142 production wells, 28 exploratory wells)
   8 exploratory wells are random and are counted with platforms closest to random drilling

TABLE 4.1-4

OCS Drilling Scenario C

Units: 1000 ft.

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	NOTES
EAST CHANNEL "A"	95 (68)	-	-	-	-	-	10E	20E	10E	10E,100	100	90	10E					1
MID CHANNEL "A"	30 (68)	-	-	-	-	-	-	-	-	10E	20E	20E	100	100	80			1
WEST CHANNEL "C"	36 (68)	-	-	-	-	-	-	10E	20E	10E	10E,100	100	10E,90					1
WEST CHANNEL "D"	37 (68)	-	-	-	-	-	-	-	10E	20E	10E	10E,100	100	80				1
PT. CONCEPTION "D"	9 (68)	-	-	-	-	-	-	10E	20E	10E	10E,100	100	80	10E				1

E-EXPLORATORY

NOTE: 1) BLM Lease Sale 48 EIS - One-half of estimates (142 production wells, 28 exploratory wells)

TABLE 4.2-5

Tidelands Drilling Scenario A

Units: 1000 ft.

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	NOTES
HEIDI	PRC 3150)																	
	)	-	10	40	40													1
HOPE	PRC 3150)																	
HAZEL	PRC 1824)																	
	)	-	30	50	100													1
HILDA	PRC 1824)																	
HOLLY	PRC 3242	20	40	80	100	30												1,2

E-EXPLORATORY

NOTES: 1) Pre-1980 data obtained from DOG - Santa Paula Office (8 Wells)
2) Holly (30 wells)

TABLE 4.2-6

Tidelands Drilling Scenario B

Units: 1000 ft.

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	NOTES
SOUTH ELWOOD "B"	PRC 308	-	-	-	10E	20E	10E	100	100	100								1
WEST TIDELANDS "A"	PRC 2979	-	-	-	20E	20E	100	100	50									2
WEST TIDELANDS "B"	PRC 2725	-	-	-	-	-	10E	20E	10E	100	100	50						2
WEST TIDELANDS "C"	PRC 2793	-	-	-	-	-	10E	20E	10E	100	100	50						2
VENTURA "A"	PRC 3314	-	-	-	-	-	-	10E	20E	10E	100	100	50					2

E-EXPLORATORY

NOTES: 1) Similar to Platform Holly (30 Wells)
2) Assume 25 wells

TABLE 4.3-1

VENTURA COUNTY ONSHORE OIL PRODUCTION BY GROWTH AND NONGROWTH AREA

UNITS: BBL/YEAR, EXCEPT WHERE INDICATED

AREA	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
CAMARILLO GA	-	-	-	-	-	-	-	-	-	-	-	-
CAMARILLO NGA	686,242	646,720	638,300	596,900	558,300	522,100	488,100	456,600	427,000	399,400	373,500	349,300
FILLMORE GA	-	-	-	-	-	-	-	-	-	-	-	-
FILLMORE NGA	1,067,703	954,365	980,000	930,500	883,500	838,900	796,500	756,100	718,100	681,900	647,400	614,700
MOORPARK GA	84,707	76,705	79,600	75,600	71,800	68,200	64,700	61,500	58,400	55,400	52,600	50,000
MOORPARK NGA	-	-	-	-	-	-	-	-	-	-	-	-
OAK PARK GA	-	-	-	-	-	-	-	-	-	-	-	-
OAK PARK NGA	-	-	-	-	-	-	-	-	-	-	-	-
OJAI GA	111,524	109,301	117,000	115,600	114,100	112,700	111,300	110,000	108,600	107,300	106,000	104,700
OJAI NGA	1,003,713	983,706	1,053,000	1,040,000	1,027,300	1,014,600	1,002,100	989,800	977,600	965,600	953,700	942,000
OXNARD GA	778,769	615,416	607,200	567,900	531,100	496,600	464,500	434,400	406,200	379,900	355,300	332,300
OXNARD NGA	384,266	229,039	175,800	164,400	153,800	143,800	134,500	125,800	117,600	110,000	102,900	96,200
PIRU GA	-	-	-	-	-	-	-	-	-	-	-	-
PIRU NGA	713,913	685,016	724,300	688,200	653,400	620,400	589,100	559,400	531,100	504,300	478,800	454,600
PORT HUENEME GA	-	-	-	-	-	-	-	-	-	-	-	-
SANTA PAULA GA	80,219	73,673	66,200	61,100	60,200	57,400	54,700	52,200	49,800	47,500	45,300	43,200
SANTA PAULA NGA	833,171	780,383	761,400	726,100	692,400	660,300	629,600	600,400	572,500	546,000	520,600	496,500
SIMI VALLEY GA	92,802	75,681	71,000	67,400	64,000	60,800	57,700	54,800	52,100	49,400	46,900	44,600
SIMI VALLEY NGA	134,829	123,194	143,300	136,100	129,200	122,700	116,500	110,600	105,100	99,800	94,700	90,000
THOUSAND OAKS GA	-	-	-	-	-	-	-	-	-	-	-	-
THOUSAND OAKS NGA	-	-	-	-	-	-	-	-	-	-	-	-
VENTURA GA-(O)	4,006,892	3,495,920	3,058,000	2,925,600	2,789,900	2,660,400	2,537,000	2,419,300	2,307,000	2,200,000	2,097,900	2,000,600
VENTURA GA-(SP)	1,001,723	873,980	767,000	731,400	697,500	665,100	634,200	604,800	576,800	550,000	524,500	500,100
VENTURA GA-(B)	1,001,723	873,980	767,000	731,400	697,500	665,100	634,200	604,800	576,800	550,000	524,500	500,100
VENTURA NGA-(O)	8,150,012	7,326,462	6,778,000	6,463,500	6,163,600	5,877,600	5,604,900	5,344,600	5,096,800	4,860,100	4,634,800	4,419,800
VENTURA NGA-(SP)	3,175	3,186	2,300	2,200	2,100	2,000	1,900	1,800	1,700	1,600	1,600	1,500
VENTURA NGA-(B)	-	-	-	-	-	-	-	-	-	-	-	-
NORTH HALF	748,950	713,788	750,900	716,300	721,900	707,800	694,000	680,500	667,200	654,200	641,500	628,900
TOTAL:	20,884,333	18,410,015	17,550,800	16,762,200	16,011,600	15,296,500	14,615,700	13,967,800	13,350,400	12,762,600	12,202,500	11,669,100
TOTAL, IN BBL/DAY	57,200	51,100	48,100	45,900	43,900	41,900	40,000	38,100	36,600	35,000	33,400	32,000
GAS PRODUCTION FROM WEST MONTALVO GAS ZONE:												
(MCF/YEAR)	1,184,097	781,683	515,000	463,400	401,400	347,700	301,200	260,900	226,000	195,700	169,600	146,900
(MCF/DAY)	3,200	2,100	1,500	1,300	1,100	1,000	800	700	600	500	500	400

For Notes, see Appendix 4.A

KK:ss/097,111

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	GOR (SCF/BBL)	NOTES
-	-	-	-	-	-	-	-	-	-	-	-	-	
326,600	305,500	285,700	267,200	249,900	233,700	218,500	204,400	191,100	178,700	167,200	156,300	2,200	1,2,3
-	-	-	-	-	-	-	-	-	-	-	-	-	
583,700	554,200	526,200	499,600	474,400	450,500	427,700	406,100	385,600	366,100	347,600	330,100	1,400	1,2,3
47,500	45,100	42,800	40,600	38,600	36,600	34,800	33,000	31,400	29,800	28,300	26,900	1,600	1,2,3
-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	
103,400	102,100	100,900	99,600	98,400	97,200	96,000	94,800	93,600	92,500	91,300	90,200	900	1,2,3
930,400	919,000	907,700	896,500	885,500	874,600	863,800	853,200	842,700	832,300	822,100	812,000	900	1,2,3
310,700	290,600	271,800	254,200	237,700	222,300	207,900	194,400	181,800	170,000	159,000	148,700	2,200	1,2,3,5
90,000	84,100	78,700	73,600	68,800	64,400	60,200	56,300	52,600	49,200	46,000	43,100	2,200	1,2,3
-	-	-	-	-	-	-	-	-	-	-	-	-	
431,700	409,900	389,200	369,500	350,900	333,200	316,300	300,400	285,200	270,800	257,100	244,100	1,400	1,2,3
-	-	-	-	-	-	-	-	-	-	-	-	-	
41,200	39,300	37,400	35,700	34,000	32,500	31,000	29,500	28,100	26,800	25,600	24,400	900	1,2,3
473,500	451,500	430,500	410,600	391,500	373,300	356,000	339,500	323,700	308,700	294,400	280,700	900	1,2,3
42,300	40,200	38,200	36,200	34,400	32,700	31,000	29,500	28,000	26,600	25,200	24,000	1,600	1,2,3
85,400	81,100	77,000	73,200	69,500	66,000	62,600	59,500	56,500	53,600	50,900	48,400	1,600	1,2,3
-	-	-	-	-	-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	-	-	-	-	-	
1,907,700	1,819,200	1,734,800	1,654,300	1,577,500	1,504,400	1,434,500	1,368,000	1,304,500	1,244,000	1,186,300	1,131,200	900	1,2,3
476,900	454,800	433,700	413,600	394,400	376,100	358,600	342,000	326,100	311,000	296,600	282,800	900	1,2,3
476,900	454,800	433,700	413,600	394,400	376,100	358,600	342,000	326,100	311,000	296,600	282,800	900	1,2,3
4,214,700	4,019,100	3,832,600	3,654,800	3,485,200	3,323,500	3,169,300	3,022,200	2,882,000	2,748,300	2,620,800	2,499,200	900	1,2,3,4
1,400	1,400	1,300	1,200	1,200	1,100	1,100	1,000	1,000	900	900	800	900	1,2,3
-	-	-	-	-	-	-	-	-	-	-	-	-	
616,700	604,700	592,900	581,300	570,000	558,900	548,000	537,300	526,800	516,500	506,400	496,600	1,500	1,2,3
11,160,700	10,676,600	10,215,100	9,775,300	9,356,300	8,957,100	8,575,900	8,213,100	7,866,800	7,536,800	7,222,300	6,922,300		
30,600	29,300	28,000	26,800	25,600	24,500	23,500	22,500	21,600	20,600	19,800	19,000		
127,200	110,200	95,400	82,700	71,600	62,000	53,700	46,500	40,300	34,900	30,200	26,200	N/A	1,2
300	300	300	200	200	200	100	100	100	100	100	100		

XXiss/225.498

TABLE 4.1-2

OCS AND TIDELAND SCENARIO SUMMARY TABLE

UNITS: BBL/DAY

SCENARIO	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
SCENARIO A:												
OCS	33,700	32,800	30,100	31,150	65,000	86,900	88,400	82,500	76,700	70,700	57,000	46,150
TIDELANDS (PLATFORMS)	6,250	5,850	10,350	12,000	22,950	21,300	19,800	18,200	16,850	13,650	11,050	8,850
TOTAL:	39,950	38,650	40,450	43,150	87,950	108,200	108,200	100,700	93,550	84,350	68,050	55,000
SCENARIO B:												
SCENARIO A	39,950	38,650	40,450	43,150	87,950	108,200	108,200	100,700	93,550	84,350	68,050	55,000
OCS	-	-	-	-	-	3,300	10,000	26,000	40,500	53,700	58,800	70,000
TIDELANDS (PLATFORMS)	-	-	-	-	-	3,300	12,700	22,000	33,300	41,100	49,000	47,400
TOTAL:	39,950	38,650	40,450	43,150	87,950	114,800	130,900	148,700	167,150	179,150	175,850	172,400
SCENARIO C:												
SCENARIO B	39,950	38,650	40,450	43,150	87,950	114,800	130,900	148,700	167,150	179,150	175,850	172,400
OCS	-	-	-	-	-	-	-	-	3,300	13,300	26,700	38,300
TOTAL:	39,950	38,650	40,450	43,150	87,950	114,800	130,900	148,700	170,450	192,450	202,550	210,900

XX:ss/644

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	SOURCE
35,350	27,700	20,600	15,850	13,300	10,950	8,550	6,900	5,700	4,800	3,600	3,050	Table 4.3-3
7,300	5,500	3,700	3,000	2,400	1,900	1,500	1,200	900	700	600	500	Table 4.3-6
42,650	33,200	24,300	18,850	15,700	12,850	10,050	8,100	6,600	5,500	4,200	3,550	
42,650	33,200	24,300	18,850	15,700	12,850	10,050	8,100	6,600	5,500	4,200	3,550	
79,900	87,600	92,100	87,600	83,700	80,400	72,300	58,100	47,000	38,400	31,300	25,800	Table 4.3-4
41,600	34,600	28,900	24,000	20,200	16,900	14,100	11,900	10,100	8,800	7,700	6,600	Table 4.3-7
164,150	155,400	145,300	130,450	119,600	110,150	96,450	78,100	63,700	52,700	43,200	35,950	
164,150	155,400	145,300	130,450	119,600	110,150	96,450	78,100	63,700	52,700	43,200	35,950	
40,900	39,000	33,100	28,100	23,900	20,400	17,300	14,700	12,500	10,800	9,500	8,400	Table 4.3-5
205,050	194,400	178,400	158,550	143,500	130,550	113,750	92,800	76,200	63,500	52,700	44,350	

XX:ss/743

TABLE 4.1-3

OCS SCENARIO A

UNITS: BBL/DAY, EXCEPT WHERE INDICATED

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
GINA	P0202	-	-	-	-	6,450	4,300	3,000	2,200	1,900	1,500	1,300	1,200
GILDA (REPETTO)	P0216	-	-	-	-	4,000	18,000	17,000	16,000	14,500	12,500	9,500	7,500
GRACE	P0217	-	-	-	3,350	7,850	11,500	13,000	11,300	9,200	7,800	6,700	5,650
HOGAN/HOUCHIN	P0166	4,200	4,700	4,700	4,000	3,400	2,900	2,400	2,100	1,800	1,500	1,300	1,100
HENRY	P0240	-	-	-	3,000	6,000	4,800	3,800	3,100	2,600	2,200	1,900	1,600
HILLHOUSE	P0240	8,800	7,900	6,900	5,700	5,100	4,200	3,800	3,300	3,000	2,700	2,400	2,100
UNION "A"/"B"	P0241	20,700	16,600	15,200	12,400	11,700	12,500	13,600	12,900	12,300	11,200	10,300	9,100
UNION "C"	P0241	-	3,600	3,300	2,700	2,500	2,000	1,800	1,600	1,400	1,300	1,100	1,000
HONDO "A"	P0188	-	-	-	-	16,000	27,000	30,000	30,000	30,000	30,000	22,500	16,900
TOTAL:		33,700	32,800	30,100	29,550	59,200	78,500	77,900	71,700	65,600	60,200	47,100	37,250
HABITAT (GAS)	P0234	-	-	-	-	-	49,300	52,100	64,400	64,400	64,400	61,600	58,900

TABLE 4.1-4

OCS SCENARIO B

UNITS: BBL/DAY, EXCEPT WHERE INDICATED

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
GILDA (MONTEREY)	P0216	-	-	-	-	-	-	-	2,700	5,300	8,000	6,800	5,800
SANTA CLARA "C"	P0215	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200	6,100	5,200
HONDO "B"	P0190	-	-	-	-	-	-	-	-	-	-	5,000	10,000
SACATE "A"	P0193	-	-	-	-	-	-	-	-	-	-	-	5,000
PESCADO "A"	P0183	-	-	-	-	-	-	-	-	-	-	-	5,000
WEST CHANNEL "A"	P0358	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200
WEST CHANNEL "B"	P0148	-	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500
PT. CONCEPTION "A"	P0321	-	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200	6,100
PT. CONCEPTION "B"	P0318	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200
PT. CONCEPTION "C"	P0316	-	-	-	-	-	-	-	-	-	3,300	6,700	10,000
TOTAL:		-	-	-	-	-	3,300	10,000	26,000	40,500	51,700	58,800	70,900
SANTA ROSA "A" (GAS)	P0232	-	-	-	-	-	-	49,300	52,100	64,400	64,400	64,400	61,600

For Notes, see Appendix 4.A

KK:ss/721

89	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	GOR (SCF/BBL)	NOTES
1,100	900	800	700	650	600	550	500	450	400	-	-	200	1,2,3
000	3,500	2,500	1,600	1,250	950	800	650	550	450	400	460	1,000	1,2,3
4,650	4,100	3,500	2,950	2,600	2,200	1,800	1,550	1,300	1,150	900	800	1,000	1,3,4
900	800	-	-	-	-	-	-	-	-	-	-	600	3,5
400	1,200	1,000	800	700	600	-	-	-	-	-	-	600	1,3,6,7
1,700	1,300	900	800	600	500	400	-	-	-	-	-	400	3,5
900	5,800	4,400	3,700	3,200	2,700	2,300	2,000	1,700	1,400	1,200	1,000	400	3,5
800	600	400	-	-	-	-	-	-	-	-	-	400	3,5
12,700	9,500	7,100	5,300	4,300	3,400	2,700	2,200	1,700	1,400	1,100	900	1,000	1,3,6,7
650	22,400	16,900	12,650	10,300	7,750	5,850	4,900	4,000	3,400	2,400	2,050		
56,200	52,100	45,200	39,700	34,200	30,100	27,400	24,700	23,300	20,500	19,200	17,800	N/A	8

1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	GOR (SCF/BBL)	NOTES
900	4,200	3,500	3,000	2,600	2,200	1,900	1,600	1,400	1,300	1,100	1,000	1,000	9
4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,300	1,200	1,000	1,000	3,10,11
500	21,500	21,500	21,500	21,500	21,500	16,100	12,100	9,100	6,800	5,100	3,800	1,000	3,6,7,12
000	15,000	20,000	20,000	20,000	20,000	20,000	16,000	12,800	10,300	8,200	6,600	1,500	3,13
10,000	15,000	20,000	20,000	20,000	20,000	20,000	16,000	12,800	10,300	8,200	6,600	1,500	3,13
100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,300	1,000	11,14,15
200	6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,000	11,14,15
5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,300	1,200	1,000	11,14,15
100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,300	1,000	11,14,15
8,500	7,200	6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,000	11,14,15
79,900	87,600	92,100	87,600	83,700	80,400	72,100	58,100	47,000	38,400	31,300	25,800		
900	56,200	52,100	45,200	39,700	34,200	30,100	27,400	24,700	23,300	20,500	19,200	N/A	8

KK:ss/645

TABLE 4.3-5

OCS SCENARIO C

UNITS: BBL/DAY

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
EAST CHANNEL "A"	95 (68)	-	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200
MID CHANNEL "A"	30 (68)	-	-	-	-	-	-	-	-	-	-	-	3,300	6,700
WEST CHANNEL "C"	36 (68)	-	-	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500
WEST CHANNEL "D"	37 (68)	-	-	-	-	-	-	-	-	-	-	3,300	6,700	10,000
PT. CONCEPTION "D"	9 (68)	-	-	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500
TOTAL:		-	-	-	-	-	-	-	-	3,300	13,300	26,700	38,500	40,900

TABLE 4.3-6

TIDELAND SCENARIO A (PLATFORM PRODUCTION)

UNITS: BBL/DAY

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
HOPE/HEIDI	PRC 3150	2,700	3,100	3,500	4,000	3,400	2,900	2,500	2,100	1,800	1,600	1,300	1,100	1,000
HILDA/HAZEL	PRC 1824	650	550	550	1,500	1,350	1,200	1,100	900	750	650	550	450	400
HOLLY	PRC 3242	2,900	2,200	6,300	6,500	18,200	17,200	16,200	15,200	14,300	11,400	9,200	7,300	5,900
TOTAL:		6,250	5,850	10,350	12,000	22,950	21,300	19,800	18,200	16,850	13,650	11,050	8,850	7,300

TABLE 4.3-7

TIDELAND SCENARIO B (PLATFORM PRODUCTION)

UNITS: BBL/DAY

PLATFORM	LOCATION	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
SOUTH ELWOOD "B"	PRC 308	-	-	-	-	-	-	6,000	12,000	18,200	17,200	16,200	15,200	14,300
WEST TIDELANDS "A"	PRC 2879	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200	6,100	5,200	4,400
WEST TIDELANDS "B"	PRC 2725	-	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200
WEST TIDELANDS "C"	PRC 2793	-	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500	7,200
VENTURA "A"	PRC 3314	-	-	-	-	-	-	-	-	-	3,300	6,700	10,000	8,500
TOTAL:		-	-	-	-	-	3,300	12,700	22,000	33,300	41,100	49,000	47,400	41,600

For Notes, see Appendix 4.A

XX:ss/683,507

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	GOR (SCF/BBL)	Comments	NOTES
6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,000		11,16
10,000	8,500	7,200	6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,000		11,16
7,200	6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,000		11,16
8,500	7,200	6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,000		11,16
7,200	6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,000		11,16
39,000	33,100	28,100	23,900	20,400	17,300	14,700	12,500	10,800	9,500	8,400			

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	GOR (SCF/BBL)	COMMENTS	NOTES
800	-	-	-	-	-	-	-	-	-	-	900		3,5
-	-	-	-	-	-	-	-	-	-	-	3,000		3,5
4,700	3,700	3,000	2,400	1,900	1,500	1,200	900	700	600	500	1,100		3.5
5,500	3,700	3,000	2,400	1,900	1,500	1,200	900	700	600	500			

1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	GOR (SCF/BBL)	COMMENTS	NOTES
11,400	9,200	7,100	5,900	4,700	3,700	3,000	2,400	1,900	1,500	1,200	1,000		17
3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,300	1,200	1,000	500		11,18
6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,000		11,19
6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,400	1,000		11,19
7,200	6,100	5,200	4,400	3,800	3,200	2,700	2,300	2,000	1,800	1,600	1,000		11,19
34,600	28,900	24,000	20,200	16,900	14,100	11,900	10,100	8,800	7,700	6,600			

XX:ss/525

TABLE 4.4-1

PROCESSING SCENARIOS (A, B, C)

Location	Scenario A	Scenario B	Scenario C
Mobil-Rincon	Henry Hillhouse Union "A"/"B" Union "C"	Henry Hillhouse Union "A"/"B" Union "C"	Henry Hillhouse Union "A"/"B" Union "C" East Channel "A"(2)
La Conchita	Hogan/Houchin	Hogan/Houchin	Hogan/Houchin
Carpinteria	Grace(1) Habitat(3) Heidi/Hope Hazel/Hilda	Grace(1) Habitat(3) Heidi/Hope Hazel/Hilda Santa Clara "C"(2) Santa Rosa "A"(3)	Grace(1) Habitat (3) Heidi/Hope Hazel/Hilda Santa Clara "C"(2) Santa Rosa "A"(3)
Elwood	Holly	Holly South Elwood "B"	Holly South Elwood "B" Mid Channel "A"
Oxnard	Gina Gilda	Gina Gilda Ventura "A"	Gina Gilda Ventura "A"
OS & T	Hondo "A"	Hondo "A"	Hondo "A"
Las Flores	-	Hondo "B" Sacate "A" Pescado "A" West Channel "A"(2) West Channel "B"(2) West Tidelands "B" West Tidelands "C"	Hondo "B" Sacate "A" Pescado "A" West Channel "A"(2) West Channel "B"(2) West Tidelands "B" West Tidelands "C" West Channel "C"(2) West Channel "D"(2)
Pt. Conception	-	Pt. Conception "A" Pt. Conception "B" Pt. Conception "C" West Tidelands "A"	Pt. Conception "A" Pt. Conception "B" Pt. Conception "C" West Tidelands "A" Pt. Conception "D"

Notes:

(1) Heater treater on platform
(2) Heater treater assumed to be on platform
(3) Gas platform only

KK:ss/700

Table 4.4-1 identifies which processing location is assumed to serve each platform under Scenarios A, B and C.

4.5 Crude Oil Transportation Scenarios

Three crude oil transportation scenarios (A, B, C) are presented here. These scenarios are based on the previously developed crude oil production scenarios and various assumptions about crude oil transport.

Transportation of crude oil is assumed to occur using one of two systems:

1) Ventura County Distribution System

   a) Existing Pipelines
   b) Tanker Trucks
   c) Local Refineries

2) Marine Tankering

   a) Ventura County Terminals (Union and Getty)
   b) Exxon OS&T
   c) Los Flores Terminal
   d) Elwood Terminal
   e) Pt. Conception Terminal

The following assumptions were made in determining the transport methods for the production areas:

1) The crude oil produced onshore Ventura County, in the Ventura County and eastern Santa Barbara County tidelands, and in the eastern Santa Barbara Channel (OCS) is transported via the Ventura County distribution system and existing marine terminals in Ventura County.

2) The crude oil produced at all other locations will be marine tankered because no pipelines are currently available. Fifty percent will go north and the other fifty percent will go south.

   - Mid Santa Barbara Channel and Tidelands (Elwood Marine Terminal)
   - West Santa Barbara Channel and Tidelands (Las Flores Marine Terminal)
   - Pt. Conception Santa Barbara Channel and Tidelands (Pt. Conception Marine Terminal)
   - Platform Hondo "A" (OS&T)

3) The current capacity of the pipeline system is 87,000 BPD, and will become 93,000 BPD when Union Oil expands its Santa Paula-Torrey Canyon segment capacity from 18,000 to 31,000 BPD in 1981. This will make the Ventura-Santa Paula segment capacity limiting at 24,000 BPD, adding 6,000 BPD to the current capacity.

4) The tanker truck transport of crude oil in Ventura County in 1978 was 5,000 BPD. After 1978, it will decrease according to onshore production decreases in Ventura County (0.95 factor).

5) Starting in 1978, Ventura County marine terminals operated at 20,000 BPD. Throughput will decrease according to onshore production decreases in Ventura County (0.95 factor). (Note: The 1979 data represents an unusually low throughput due to problems in operations at the terminals.)

6) Starting in 1978, Ventura County's local refineries will be able to process 31,000 BPD.

Tables 4.5-1 through 4.5-3 present the three crude oil transportation scenarios (A, B, C).

TABLE 4.5-1

CRUDE OIL TRANSPORTATION SCENARIO A

UNITS: 1,000 BBL/DAY

CRUDE OIL TRANSPORT MODE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Ventura County Dist. System															
-Pipeline	61	49	32	44	28	46	55	53	44	37	31	23	17	13	
-Tanker Truck	8	7	5	5	5	4	4	4	4	3	3	3	3	3	
-Local Refineries	10	10	31	31	31	31	31	31	31	31	31	31	31	31	
Total	79	66	68	80	64	81	90	88	78	71	65	57	51	44	36
Marine Tankers															
-Ventura County	25	25	20	3	18	17	16	15	15	14	13	13	12	11	11
-OS & T	-	-	-	-	-	16	27	30	30	30	30	23	17	13	10
-Las Flores	-	No Tankering													
-Elwood	-	3	2	6	7	18	17	16	15	14	11	9	7	6	5
-Pt. Conception	-	No Tankering													
Total	25	28	22	9	25	51	60	61	60	58	54	45	36	30	26

NOTES: 1) From 1990 on, only the total amount of crude oil transport in the Ventura County Distribution System can be estimated reliably.

TABLE 4.5-2

CRUDE OIL TRANSPORTATION SCENARIO B

UNITS: 1,000 BBL/Day

CRUDE OIL TRANSPORT MODE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Ventura County Dist. System															
-Pipeline	61	49	32	44	28	46	58	60	58	52	52	44	39	29	
-Tanker Truck	8	7	5	5	5	4	4	4	4	3	3	3	3		
-Local Refineries	10	10	31	31	31	31	31	31	31	31	31	31	31	31	
Total	79	66	68	80	64	81	93	95	93	86	86	78	73	63	52
Marine Tankers															
-Ventura County	25	25	20	3	18	17	16	15	15	14	13	13	12	11	11
-OS & T	-	-	-	-	-	16	27	30	30	30	30	23	17	13	10
-Las Flores	-	-	-	-	-	-	-	-	3	17	31	44	53	65	73
-Elwood	-	3	2	6	7	18	17	22	27	32	28	25	22	20	16
-Pt. Conception	-	-	-	-	-	-	3	10	20	25	29	29	29	24	21
Total	25	28	22	9	25	51	63	77	95	118	131	134	133	133	131

NOTES: 1) From 1990 on, only the total amount of crude oil transport in the Ventura County Distribution System can be estimated reliably.

XX:ss/841,834

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	NOTES
										1
										1
										1
32	28	26	23	21	20	17	17	16	15	
10	10	9	9	8	8	8	7	7	6	
7	5	4	3	3	2	2	1	1	1	
4	3	2	2	2	1	1	1	1	1	
21	18	15	14	13	11	11	9	9	8	

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	NOTES
										1
										1
										1
46	40	35	31	28	26	23	21	19	19	
10	10	9	9	8	8	8	7	7	6	
7	5	4	3	3	2	2	1	1	1	
80	76	74	72	65	53	42	23	28	23	
13	10	8	7	6	4	3	3	3	2	
18	15	13	11	9	8	7	7	6	5	
128	116	108	102	92	75	62	52	45	37	

KK:ss/072,J64

TABLE 4.5-1

CRUDE OIL TRANSPORTATION SCENARIO C

UNITS: 1,000 BBL/DAY

CRUDE OIL TRANSPORT MODE	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Ventura County Dist. System															
-Pipeline	61	49	32	44	28	46	58	60	57	55	53	54	48	36	
-Tanker Truck	8	7	5	5	5	4	4	4	4	3	3	3	3	3	
-Local Refineries	10	31	31	31	31	31	31	31	31	31	31	31	31	31	
Total	79	87	68	80	64	81	93	95	92	89	87	88	82	70	58
Marine Tankers															
-Ventura County	25	25	20	3	18	17	16	15	15	14	13	13	12	11	11
-OS & T	-	-	-	-	-	16	27	30	30	30	30	23	17	13	10
-Las Flores	-	-	-	-	-	-	-	-	3	17	34	54	70	84	89
-Elwood	-	3	2	6	7	18	17	22	27	32	28	25	25	27	26
-Pt. Conception	-	-	-	-	-	-	3	9	21	27	32	36	39	33	28
Total	25	28	22	9	25	51	63	76	96	120	137	151	153	168	164

NOTES: 1) From 1990 on, only the total amount of crude oil transport in the Ventura County Distribution System can be estimated reliably.

KK:ss/948

1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	NOTES
										1
										1
										1
49	42	38	33	30	27	24	23	22	20	
10	10	9	9	8	8	8	7	7	6	
7	5	4	3	3	2	2	1	1	1	
93	87	84	80	72	59	47	38	32	27	
22	17	14	11	10	8	6	5	5	4	
24	19	16	14	12	11	9	9	8	7	
156	138	127	117	105	88	62	60	51	45	

XX:ss/777

Appendix 4.A.

NOTES TO TABLE 4.3-1

1. 1977 to 1979 production data derived from annual reports from the California Division of Oil and Gas. See Table 4.A-1 for geographic distribution of oil field production data.

2. 1980 and later production forecasts derived by using the following yearly production decline rates:

RSA 1:	1.95%
RSA 2 (excluding Ojai):	4.64%
OJAI:	1.23%
RSA 3:	6.48%
RSA 4:	5.04%
RSA 6:	5.05%
WEST MONTALVO GAS:	13.38%

These factors were derived by linear regression of the natural logarithm of production data for the years 1971 to 1979.

3. Gas/oil ratio is determined by dividing 1971-78 gas production by 1971-78 oil production, by Regional Statistical Area:

RSA 1:	1,500 SCF/BBL
RSA 2:	900 SCF/BBL
RSA 3:	2,200 SCF/BBL
RSA 4:	1,600 SCF/BBL
RSA 6:	1,400 SCF/BBL

The gas/oil rated for RSA 3 does not take into account gas production from the West Montalvo Gas Field, which is listed separately.

4. Production estimates and forecasts for the Ventura NGA-1 include offshore production from the Rincon Field. See Table 4.A-2 for offshore production forecasts.

5. Production estimates and forecasts for the Oxnard GA include offshore production from the West Montalvo Field. See Table 4.A-2 for offshore production forecasts.

TABLE 4.A-1

VENTURA COUNTY OIL FIELDS BY REGIONAL STATISTICAL AREA AND GROWTH/NONGROWTH AREA

AREA	FIELD
RSA 2[1]	
OJAI, GA$_3$[2]	.10 OJAI
OJAI NGA[3]	.90 OJAI
SAN BUENAVENTURA GA-(O)	.40 VENTURA
SAN BUENAVENTURA GA-(SP)	.10 VENTURA
SAN BUENAVENTURA GA-(B)	.10 VENTURA
SAN BUENAVENTURA NGA-(O)	RINCON
	SAN MIGUELITO
	.40 VENTURA
SAN BUENAVENTURA NGA-(SP)	CANADA LARGA
	.10 SANTA PAULA
SANTA PAULA GA	.40 SANTA PAULA
	.40 SATICOY
SANTA PAULA NGA	.50 SANTA PAULA
	.60 SATICOY
	.50 SOUTH MOUNTAIN
	.80 WEST MOUNTAIN
RSA 3	
CAMARILLO NGA	.50 SOUTH MOUNTAIN
	.20 WEST MOUNTAIN
	SUBTOTAL CNGA
OXNARD GA	.70 OXNARD
	SANTA CLARA AVENUE
	.40 WEST MONTALVO
	SUBTOTAL OXGA
OXNARD NGA	.30 OXNARD
	.60 WEST MONTALVO
RSA 4	
MOORPARK GA	MOORPARK
	MOORPARK WEST
	OAK PARK
SIMI VALLEY GA	BIG MOUNTAIN
	SIMI
SIMI VALLEY NGA	.50 OAK RIDGE
	SOUTH TAPO CANYON
RSA 5	LAS POSAS

RSA 6

FILLMORE NGA

PIRU NGA

BARDSDALE
.50 SESPE
SHIELLS CANYON
EUREKA CANYON
HOLSER
HOPPER CANYON
NORTH TAPO
50 OAK RIDGE
PIRU
PIRU CREEK
.67 RAMONA
SANTA SUSANA
TAPO RIDGE
TEMESCAL
TORREY CANYON

RSA 1

NORTH HALF

.50 SESPE
TIMBER CANYON

[1]RSA: REGIONAL STATISTICAL AREA
[2]GA: GROWTH AREA
[3]NGA: NONGROWTH AREA

KK:ss/648,934,906

TABLE 4.A-2

TIDELAND SCENARIO A (EXCLUDING PLATFORMS)

UNITS: BBL/YEAR, EXCEPT WHERE INDICATED

FIELD	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
SANTA BARBARA COUNTY:												
ALEGRIA	27,161	29,700	55,100	-	-	-	-	-	-	-	-	-
COAL OIL POINT	7,025	252	-	-	-	-	-	-	-	-	-	-
ELWOOD	64,431	59,012	56,300	47,300	39,700	33,400	28,000	23,500	19,800	16,600	14,000	11,700
MOLINO	27,864	20,444	16,700	14,200	11,900	10,000	8,400	7,100	5,900	5,000	4,200	3,500
PT. CONCEPTION	52,548	32,495	30,100	25,300	21,200	17,800	15,000	12,600	10,600	8,900	7,500	6,300
SUBTOTAL:	179,029	141,903	158,400	86,800	72,800	61,200	51,400	43,200	36,300	30,500	25,700	21,500
VENTURA COUNTY:												
WEST MONTALVO	60,576	38,891	26,800	24,000	21,500	19,300	17,300	15,500	13,900	12,400	11,100	10,000
RINCON	389,713	260,374	377,000	337,800	302,700	271,200	243,000	217,700	195,100	174,800	156,600	140,300
SUBTOTAL:	450,289	299,265	403,800	361,800	324,200	290,500	260,300	233,200	209,000	187,200	167,700	150,300
TOTAL:	629,318	441,168	562,200	448,600	397,000	351,700	311,700	276,400	245,300	217,700	193,400	171,800
TOTAL, IN BBL/DAY:	1,700	1,200	1,500	1,200	1,100	1,000	900	800	700	600	500	500
GAS PRODUCTION FROM GAS FIELDS:												
CALIENTE	211,830	138,923	138,000	102,700	76,400	56,800	42,300	31,500	23,400	17,400	13,000	9,600
GAVIOTA	2,027	7,705	60,600	45,100	33,500	25,000	18,600	13,800	10,300	7,600	5,700	4,200
MOLINO	2,434,301	2,204,161	1,570,000	1,168,100	869,100	646,600	481,100	357,900	266,300	198,100	147,400	109,700
TOTAL:	2,648,158	2,350,989	1,768,600	1,315,900	979,000	728,400	542,000	403,200	300,000	223,100	166,100	123,500
TOTAL, IN MCF/DAY:	7,300	6,400	4,800	3,600	2,700	2,000	1,500	1,100	800	600	500	300

For Notes, See Appendix 4.A

KK:ss/329

89	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	GOR (FT^3/BBL)	COMMENTS	NOTES
-	-	-	-	-	-	-	-	-	-	-	-			20,21
-	-	-	-	-	-	-	-	-	-	-	-			20
9,800	8,300	6,900	5,800	4,900	4,100	3,500	2,900	2,400	2,100	1,700	1,400			20,22
3,000	2,500	2,100	1,800	1,500	1,200	1,000	900	700	600	500	400			20,22
5,300	4,400	3,700	3,100	2,600	2,200	1,800	1,600	1,200	1,100	900	800			20,22
18,100	15,200	12,700	10,700	9,000	7,500	6,300	5,400	4,400	3,800	3,100	2,600	2,100		23
9,900	8,000	7,200	6,400	5,800	5,200	4,600	4,100	3,700	3,300	3,000	2,700			20,24
125,700	112,600	100,900	90,400	81,000	72,600	65,100	58,300	52,200	46,800	41,900	37,600			20,24
134,600	120,600	108,100	96,800	86,800	77,800	69,700	62,400	55,900	50,100	44,900	40,300	500		25
152,700	135,800	120,800	107,500	95,800	85,300	76,000	67,800	60,300	53,900	48,000	42,900			
400	400	300	300	300	200	200	200	200	100	100	100			
7,200	5,300	4,300	3,000	2,200	1,600	1,200	900	700	500	400	300			20,26,27
2,100	2,300	1,700	1,300	1,000	700	500	400	300	200	200	100			20,26,27
81,600	60,700	45,200	33,600	25,000	18,600	13,800	10,300	7,700	5,700	4,200	3,200			20,26,27
91,900	68,300	50,900	37,900	28,200	20,900	15,500	11,600	8,700	6,400	4,800	3,600			
300	200	100	100	100	100	-	-	-	-	-	-			28

XX:ss/815

NOTES TO TABLES 4.3-2 TO 4.3-7 and 4.A-2

1. Source: Outer Continental Shelf Oil and Gas Activities in the Pacific (Southern California) and their Onshore Impacts: A Summary Report, U.S.G.S., May 1980, p. 33.

2. Source: EIR/EA, Union Oil Company Platform Gina and Platform Gilda Project, City of Oxnard/U.S.G.S., May 1980, Figure 3.3-1 and pp. 3.5-1 to 3.5-12.

3. Gas/Oil Ratio (GOR) derived by dividing total anticipated gas production by total anticipated oil production for each platform or field.

4. Source: EIR, Chevron USA Proposed Pipeline Installation, Santa Barbara Channel, Santa Barbara County Department of Environmental Resources, February 1979, p. 10-4.

5. Work Sheets (Tables 4.A-3 to 4.A-8) prepared for Platforms Hogan, Houchin, Union A, Union B, Union C, Hillhouse, Hope, Heidi, Hilda, Hazel and Holly. Sources for the Work Sheets are as follows:

   A. 1977-79 Production Data from the California Division of Oil and Gas Annual Reports;

   B. 1977-79 Production Data from John Kwong of the U.S. Geological Survey, Los Angeles;

   C. Production Curves and Decline Rates obtained from Offshore Oil and Gas Development: Southern California, OCS Project Task Force, California Office of Planning and Research, October 1977, pp. 663-690.

   D. Production Curves and Decline Rates obtained from a Memo from Allan Lind, OPR, to Al Reynolds, Santa Barbara County Department of Environmental Resources, September 2, 1977;

   E. Production Scenarios for the Dos Cuadros Field obtained in a letter from Union Oil Company, dated October 3, 1980.

6. Source: Offshore Oil and Gas Development: Southern California, Op. Cit.

7. Source: Memo from Allan Lind to Al Reynolds, Op. Cit.

8. Units: MCF/Day.

9. Source for Production Peak, Gas/Oil Ratio and Production Start-Up Date: EIR/EA, Union Oil Company Platform Gina and Platform Gilda Project, Op. Cit., Figure 3.3-1 and p. 3.5-8. Production curve derived by APCD staff. Information regarding duration of the production curve is presented in Table 4.A-9.

10. Production assumed to begin in 1982. Ultimate production for the curve utilized equals 29.2 MMB. OPR estimated potential production in the north Santa Clara Field would equal 113 MMB (Reference 6, above, p. 678). Total production from Grace and Gilda (Repetto) equals 84.6 MMB (Reference 1, above). Subtracting Grace and Gilda (Repetto) from potential production leaves 28.4 MMB.

11. Production curve derived by APCD staff, information regarding derivation of the curve is presented in Table 4.A-9.

12. Production assumed to begin in 1987. Source for Assumption: Letter from William L. Richter, Exxon, to Al Reynolds, Santa Barbara County, October 9, 1979.

13. Production assumed to begin one year after Hondo "B". Source for production curve: References 6 and 7, above, as modified to reflect a four-year production phase-in.

14. Lease Sale 48 Platforms assumed to be phased in as follows:

Point Conception "A":	1983
West Channel "A":	1984
Point Conception "B":	1984
West Channel "B":	1985
Point Conception "C":	1986

Staff assumed production activity levels from areas finally leased under OCS Sale 48 to be 50% of levels projected by BLM (Final Environmental Statement, OCS Sale No. 48, U.S. Department of the Interior, Bureau of Land Management, 1979, p. 711). Gas/Oil ratio estimated to be 1000 SCF/BBL.

15. Calculated Lease Sale 48 resource estimates utilizing the 10,000 BBL/Day peak production scenario developed by staff and the platform phasing schedule indicated in the OCS Sale 48 F.E.S. yields a total production level of 260.8 MM BBL by 2000. Estimates presented in the OCS Sale 48 F.E.S. indicate production of 279.8 MMBBL by 2000. Thus, the 10,000 BBL/Day Scenario appears to be reasonable. See Table 4.A-10 for calculations.

16. Lease Sale 68 platforms assumed to be phased in as follows:

East Channel "A":	1985
West Channel "C":	1986
Point Conception "D":	1986
West Channel "D":	1987
Mid Channel "A":	1988

Production curves for Lease Sale 68 platforms assumed to be essentially the same as those utilized for Lease Sale 48 platforms. Production activity level was assumed to be essentially the same as the level assumed for Lease Sale 48. Gas/Oil ratio estimated to be 1000 SCF/BBL.

17. Arco indicates that peak production on leases PRC 308/309 will approximate the peak level of Platform Holly. Production is assumed to be phased in over three years. Platform Holly's production decline curve is utilized for South Elwood "B". Gas/Oil ratio is assumed to be 1000 SCF/BBL, approximately the same as Holly's.

18. Information on year production begins, peak year, peak production levels and gas/oil ratio derived from Draft Environmental Impact Report: Resumption of Explortory Drilling Operations by Union Oil Company, Lease PRC 2979.1, State Lands Commission, November 1979, p. 24.

19. Platforms assumed to be phased in as follows:

West Tidelands "B": 1985
West Tidelands "C": 1985
Ventura "A": 1986
Gas/Oil ratio assumed to be 1000 SCF/BBL.

20. Sources for 1977 to 1979 production data are the annual reports from the California Division of Oil and Gas.

21. The Alegria Field appears to have reached ultimate production in 1979. Reserved reported for 12/31/76 were 100,000 BBL. 1977-79 production approximates this level.

22. 1980 and later production forecasts derived by utilizing a 16.0% decline rate per year for the Santa Barbara County Tidelands. This factor was derived by linear regression of the natural logarithm of 1971 to 1979 production for the Elwood, Molino and Point Conception Fields.

23. Gas/Oil Ratio excludes the Molino Field. Gas/Oil Ratio determined by dividing 1971-79 gas production by 1971-79 oil production for the Elwood and Point Conception fields (2,617,075 MCF ÷ 1,223,650 BBL = 2,100 SCF/BBL).

24. 1980 and later production forecasts derived by utilizing a 10.4% decline rate per year for the Ventura County Tidelands. This factor was derived by linear regression of the natural logarithm of 1971 to 1979 production for the West Montalvo and Rincon Fields.

25. Gas/Oil Ratio determined by dividing 1971-79 gas production by 1971-79 oil production for the Rincon and West Montalvo Fields (2,456,403 MCF-4,978,458 BBL = 500 SCF/BBL).

26. Units: MCF/Year.

27. 1980 and later production forecasts derived by utilizing a 25.6% decline rate per year for Santa Barbara County Tideland Gas Production from gas zones and fields. This factor was derived by linear regression of the natural logarithm of 1977 to 1979 production from the Caliente, Gaviota and Molino Fields. The forecasts do not take into account the production increases from the Molino Field anticipated as a result of the exploratory work to be carried out in the field by Shell and Phillips.

28. 1995 - Production is projected to be less than 100 MCF/Day.

KK:ss/048

TABLE 4.A-3

WORK SHEET: PHILLIPS CARPINTERIA (HOUCHIN AND HOGAN)

YEAR	PRODUCTION (BBL/DAY)	NOTES
1977	4,200	Water flooding occurred in 1978-expected to lengthen life of platforms
1978	4,700	
1979	4,700	
1980	4,000	
1981	3,400	
1982	2,900	
1983	2,400	
1984	2,100	
1985	1,800	
1986	1,500	
1987	1,300	
1988	1,100	
1989	900	
1990	800	
1991	-	
1992	-	
1993	-	
1994	-	
1995	-	
1996	-	
1997	-	
1998	-	
1999	-	
1000	-	

NOTES:

1. 1977-79 data is actual production data obtained from John Kwong, USGS, 9/15/80:
   1977 Production: 1,515,153 BBL
   1978 Production: 1,731,326 BBL
   1979 Production: 1,701,918 BBL

2. Decline rate used was 1590/year. This differs from the 20% rate used by OPR because Phillips has begin waterflood operations.

3. Production assumed to curtail below 400 BBL/Platform/Day.

KK:ss/033

TABLE 4.A-4

WORK SHEET: SUN DOS CUADROS (HILLHOUSE)

YEAR	PRODUCTION (BBL/DAY)	NOTES
1977	8,800	
1978	7,900	
1979	6,900	
1980	5,700	Approximately 15%
1981	5,100	Decline/Yr.
1982	4,200	
1983	3,800	
1984	3,300	
1985	3,000	
1986	2,700	
1987	2,400	
1988	2,100	
1989	1,700	
1990	1,300	
1991	900	
1992	800	
1993	600	
1994	500	
1995	400	
1996	-	
1997	-	
1998	-	
1999	-	
2000	-	

NOTES:

1. 1977-79 data is actual production data obtained from John Kwong, USGS, 9/5/80:
   1977 Production: 3,199,687 BBL
   1978 Production: 2,881,153 BBL
   1979 Production: 2,514,508 BBL

2. Decline rate derived from letter from Union Oil Company, dated October 3, 1980.

3. Production assumed to curtail below 400 BBL/Day.

KK:ss/096

TABLE 4.A-5

WORK SHEET: UNION DOS CUADROS (A, B, C)

YEAR	PRODUCTION (BBL/DAY) A, B	PRODUCTION (BBL/DAY) C	NOTES
1977	20,700	-	
1978	16,600	3,600	
1979	15,200	3,300	
1980	12,400	2,700	Decline rate based on
1981	12,700	2,500	Union Data
1982	12,500	2,000	
1983	13,600	1,800	
1984	12,900	1,600	
1985	12,300	1,400	
1986	11,200	1,300	
1987	10,300	1,100	
1988	9,100	1,000	
1989	6,900	800	
1990	5,800	600	
1991	4,400	400	
1992	3,700	-	
1993	3,200	-	
1994	2,700	-	
1995	2,300	-	
1996	2,000	-	
1997	1,700	-	
1998	1,400	-	
1999	1,200	-	
2000	1,000	-	

NOTES:

1. 1977-79 data is actual production data obtained from John Kwong, USGS, 9/5/80. Yearly production for Union in the Dos Cuadros Field:
   1977 Production: 7,558,262
   1978 Production: 7,367,195
   1979 Production: 6,754,580

2. Decline rate derived from letter from Union Oil Company, dated October 3, 1980.

3. For convenience, all production from Miocene assumed to be associated with Platforms A and B. Miocene production projected by Union to begin in 1981.

4. Production is assumed to curtail below 400 BB./Platform/Day

KK:ss/222

TABLE 4.A-6

WORK SHEET: CHEVRON CARPINTERIA (HOPE & HEIDI)

YEAR	PRODUCTION (BBL/DAY) EXISTING OPERATIONS	PRODUCTION (BBL/DAY) NEW OPERATIONS	TOTAL	NOTES
1977	2,700	-	2,700	New production is
1978	2,600	500	3,100	assumed to increase
1979	2,400	1,000	3,500	to peak of 2000
1980	2,000	2,000	4,000	BBL/day as indicated.
1981	1,700	1,700	3,400	
1982	1,500	1,400	2,900	1978, 1979 existing
1983	1,300	1,200	2,500	production estimated
1984	1,100	1,000	2,100	by subtracting new
1985	900	900	1,800	production from total
1986	800	800	1,600	actual production.
1987	700	600	1,300	
1988	600	500	1,100	
1989	500	500	1,000	
1990	400	400	800	Production is assumed
1991	-	-	-	to curtail at the
1992	-	-	-	production rate of
1993	-	-	-	400 BBL/Day/Platform
1994	-	-	-	
1995	-	-	-	
1996	-	-	-	
1997	-	-	-	
1998	-	-	-	
1999	-	-	-	
2000	-	-	-	

NOTE:

1. 1977-1979 data is actual production data derived from the respective D.O.G. reports.

2. 1978, 1979 existing production derived as indicated above. 1978 data derived from D.O.G. report which appears to indicate a 500 BBL/day increase attributable to the new well completion in that year.

3. 1980 and later projections for existing production derived by assuming a 15% decline/year.

4. 1978-1980 new production curve derived as indicated above. Production is assumed to decline at a rate of 15%/year.

5. 1979-1990 total production = 9.4 MMBBL. Estimated reserve as reported in the D.O.G. report as of 12/31/78 = 9.4 MMBBL.

KK:ss/220

TABLE 4.A-7

WORK SHEET: CHEVRON SUMMERLAND (HILDA & HAZEL)

YEAR	PRODUCTION (BBL/DAY) EXISTING OPERATIONS	NEW OPERATIONS	TOTAL	NOTES
1977	650	-	650	
1978	540	-	540	
1979	560	-	560	
1980	500	1,000	1,500	Assume new production
1981	450	900	1,350	begins in 1980, at a
1982	410	810	1,220	peak of 1000 BBL/Day,
1983	370	730	1,100	or 1/2 of the level
1984	330	580	910	that OPR anticipated.
1985	300	470	770	
1986	270	370	640	1980 and later new
1987	240	300	540	operation projections
1988	220	240	460	based upon decline
1989	200	190	390	rates used by OPR.
1990	-	-	-	
1991	-	-	-	Assume production
1993	-	-	-	(curtails at 390
1994	-	-	-	BBL/Day.)
1995	-	-	-	
1996	-	-	-	
1997	-	-	-	
1998	-	-	-	
1999	-	-	-	
2000	-	-	-	

NOTES:

1. 1977-79 data derived from actual production data published in annual D.O.G. reports.

2. 1980 and later projections for existing operations derived from OPR report.

3. 1980 and later projections for new operations is based upon an assumption that the peak will be 1/2 that indicated by OPR, or 1000 BBL/Day. New operations are assumed to yield production in 1980 and decline at the yearly rates assumed by OPR.

KK:ss/183

TABLE 4.A-8

WORK SHEET: ARCO SOUTH ELWOOD (HOLLY)

YEAR	PRODUCTION (BBL/DAY)	NOTES
1977	2,900	
1978	2,200	
1979	6,300	
1980	6,500	
1981	18,200	Peak of 18,200 is assumed
1982	17,200	to be moved from 1979 (OPR
1983	16,200	OCS Report) to 1981.
1984	15,200	
1985	14,300	
1986	11,400	
1987	9,200	
1988	7,300	
1989	5,900	
1990	4,700	
1991	3,700	
1992	3,000	
1993	2,400	
1994	1,900	
1995	1,500	
1996	1,200	1996-2000 production derived
1997	900	by using a 21% decline rate,
1998	700	which is equivalent to the
1999	600	decline rate assumed for
2000	500	the previous 5 years.

NOTES:

1. 1977-1979 data is actual production data derived from the yearly D.O.G. reports.

2. 1980-1995 projections equivalent to the 1978-1993 projections presented in the OPR report.

3. 1996-2000 production estimates derived by using a 21% decline rate/year.

KK:ss/284

TABLE 4.A-9

TYPICAL PRODUCTION SCENARIOS

YEAR	8,000 BBL/DAY PEAK	10,000 BBL/DAY PEAK
1	2,700	3,300
2	5,300	6,700
3	8,000	10,000
4	6,800	8,500
5	5,800	7,200
6	4,900	6,100
7	4,200	5,200
8	3,500	4,400
9	3,000	3,800
10	2,600	3,200
11	2,200	2,700
12	1,900	2,300
13	1,600	2,000
14	1,400	1,800
15	1,300	1,600
16	1,100	1,400
17	1,000	1,300
18	900	1,200
19	800	1,000
20	800	900
21	700	800
22	600	800
23	500	700
24	500	600
25	400	600
26	400	500
27	400	500
28		400
29		400
	23.1 MM BBL	29.2 MM BBL

ASSUMPTIONS:

1. 3-year phase-in period.

2. Decline Rates:
   Year 4 to Year 13: 15% Year 14, on: 10%

3. Production assumed to curtail when production drops below 400 BBL/Day.

KK:ss/014

TABLE 4.A-10

CALCULATION OF LEASE SALE 48 RESOURCE ESTIMATES UTILIZING 10,000 BBL/DAY PEAK PRODUCTION SCENARIO

Average Barrels/Day for each Platform

Year	48-01	48-02	48-03	48-04	48-05	48-06	48-07	48-08	48-09	48-10	Total
1982	3,300										3,300
1983	6,700	3,300	3,300	3,300	3,300						19,900
1984	10,000	6,700	6,700	6,700	6,700	3,300	3,300				43,400
1985	8,500	10,000	10,000	10,000	10,000	6,700	6,700	3,300			65,200
1986	7,200	8,500	8,500	8,500	8,500	10,000	10,000	6,700	3,300		65,200
1987	6,100	7,200	7,200	7,200	7,200	8,500	8,500	10,000	6,700	3,300	71,900
1988	5,200	6,100	6,100	6,100	6,100	7,200	7,200	8,500	10,000	6,700	69,200
1989	4,400	5,200	5,200	5,200	5,200	6,100	6,100	7,200	8,500	10,000	63,100
1990	3,800	4,400	4,400	4,400	4,400	5,200	5,200	6,100	7,200	8,500	53,600
1991	3,200	3,800	3,800	3,800	3,800	4,400	4,400	5,200	6,100	7,200	45,700
1992	2,700	3,300	3,300	3,300	3,300	3,800	3,800	4,400	5,200	6,100	39,200
1993	2,300	2,700	2,700	2,700	2,700	3,300	3,300	3,800	4,400	5,200	33,100
1994	2,000	2,300	2,300	2,300	2,300	2,700	2,700	3,300	3,800	4,400	28,100
1995	1,800	2,000	2,000	2,000	2,000	2,300	2,300	2,700	3,300	3,800	24,200
1996	1,600	1,800	1,800	1,800	1,800	2,000	2,000	2,300	2,700	3,300	21,100
1997	1,400	1,600	1,600	1,600	1,600	1,800	1,800	2,000	2,300	2,700	18,400
1998	1,300	1,400	1,400	1,400	1,400	1,600	1,600	1,800	2,000	2,300	16,200
1999	1,200	1,300	1,300	1,300	1,300	1,400	1,400	1,600	1,800	2,000	14,600
2000	1,000	1,200	1,200	1,200	1,200	1,300	1,300	1,400	1,600	1,800	13,200

TOTAL 260.8 MM BBL[1]

Calculated Resource Estimates: 260.8 MM BBL
B.L.M. Resource Estimates[2]: 279.8 MM BBL

NOTES:

1. Calculated estimate is equal to the total of average BBL/Day estimates times 365 days/year.

2. Source for B.L.M. estimates: Final Environmental Statement, OCS Sale No. 48, U.S. Department of the Interior, Bureau of Land Management, p. 711.

KK:ss/364

TABLE 4

POPULATION FORECASTS BY GROWTH AREA (GA) AND NON-GROWTH AREA (NG): 1980-2000[1]

		1977	1980	1985	1990	1995	2000
North Half		485	500	520	550	600	650
Silver Strand		2,054	2,542	2,542	2,542	2,542	2,542
Piru	GA	715	745	749	753	757	760
	NG	241	286	300	314	327	340
Fillmore	GA	8,423	9,886	10,392	11,150	12,050	12,950
	NG	2,050	2,128	2,144	2,169	2,210	2,250
Santa Paula	GA	19,808	22,695	23,497	24,500	25,350	26,000
	NG	1,368	1,493	1,511	1,536	1,578	1,620
Ojai	GA	18,207	20,188	20,456	20,738	21,208	21,678
	NG	4,143	5,154	5,237	5,469	5,839	5,957
Ventura	GA[2]	75,331	89,000	90,600	93,000	101,000	111,000
	NG	1,529	1,904	1,994	2,130	2,355	2,500
Oxnard	GA	102,900	130,500	137,700	148,500	158,900	183,250
	NG	3,446	3,448	3,448	3,448	3,448	3,448
Port Hueneme	GA	17,232	23,000	23,400	24,000	25,400	26,900
Camarillo	GA[3]	37,490	59,000	62,382	67,459	74,484	79,650
	NG	5,707	7,550	7,788	8,144	8,737	9,330
Thousand Oaks	GA[4]	77,377	108,900	111,450	116,400	129,900	144,900
	NG	797	1,889	2,267	2,833	3,777	4,720
Oak Park	GA	2,819	8,379	9,547	11,300	14,323	17,000
	NG	0	139	167	195	223	250
Simi Valley	GA	75,250	91,200	95,100	103,000	112,000	122,000
	NG	488	700	858	1,016	1,173	1,330
Moorpark	GA	5,540	21,000	23,250	25,500	27,750	30,000
	NG	16	40	46	60	80	110
Countywide Totals		463,896	612,266	637,345	676,706	736,016	811,305

1. All forecasts are January forecasts.
2. Ventura NG includes North Coast.
3. Camarillo GA includes Las Posas Estates; Camarillo NG includes Santa Rosa Valley and Las Posas Valley.
4. Thousand Oaks NG includes South Coast, Lake Sherwood, and Hidden Valley.

Revised July, 1980

SOURCE: 208 Areawide Water Quality Management Plan: 1979-1980; 1980 Vol. 1, September 5, 1980

November 1980

AQMP POPULATION FORECASTS

AREA		1977	+	1978	+	1979	+	1980	+	1981	+	1982	+	1983	+
OJAI	GA	19,207	643	19,850	765	19,615	375	19,980	40	20,023	40	20,068	40	20,108	40
	NGA	4,143	606	4,749	90	4,839	29	4,968	20	4,988	19	4,907	82	4,989	82
SAN BUENAVENTURA	GA	75,881	2,022	77,903	3,137	81,040	3,952	84,992	802	85,794	802	86,596	802	87,398	802
	NGA	1,529	27	1,556	27	1,583	27	1,610	54	1,664	57	1,728	58	1,786	59
SANTA PAULA	GA	19,808	361	20,169	1,643	21,812	361	22,173	107	22,280	107	22,387	107	22,494	107
	NGA	1,368	5	1,373	19	1,392	0	1,392	20	1,412	20	1,432	21	1,453	20
RSA 2		120,936		124,600		132,281		135,023		136,071		137,118		138,226	
CAMARILLO	GA	37,490	4,533	42,023	2,157	44,180	4,686	48,668	3,184	51,852	2,700	54,552	1,948	56,500	1,342
	NGA	5,707	243	5,950	269	6,219	272	6,491	209	6,700	216	6,916	211	7,127	211
OXNARD	GA	102,930	2,134	105,064	2,163	107,227	3,773	111,000	4,500	115,500	3,750	119,250	3,750	123,000	3,750
	NGA	3,446	2	3,448	0	3,448	0	3,448	0	3,448	0	3,448	0	3,448	0
PORT HUENEME	GA	17,232	721	17,953	721	18,674	721	19,395	721	20,116	721	20,837	721	21,558	721
SILVERSTRAND*		2,054	61	2,115	61	2,176	61	2,237	61	2,298	61	2,359	61	2,420	61
RSA 3		168,824		174,555		182,724		191,234		199,914		207,352		214,053	
MOORPARK	GA	5,540	1,656	7,196	1,246	8,442	2,346	10,788	1,172	11,960	2,260	14,220	2,260	16,480	2,260
	NGA	16	3	19	21	40	0	40	0	40	0	40	0	40	0
SIMI VALLEY	GA	75,250	992	76,242	2,758	79,000	2,000	81,000	2,000	83,000	1,900	84,900	1,900	86,800	1,900
	NGA	489	14	502	14	516	14	530	34	564	34	598	34	632	34
RSA 4		81,279		83,759		87,998		92,358		95,564		98,758		103,952	
OAK PARK	GA	2,819	695	3,514	779	4,293	780	5,073	661	5,734	661	6,395	662	7,057	661
	NGA	0	17	17	18	55	17	52	18	70	17	87	17	104	18
THOUSAND OAKS	GA	77,377	5,100	82,477	5,000	87,477	5,000	92,477	4,785	97,262	3,285	100,547	3,285	103,831	2,784
	NGA	797	118	915	117	1,030	116	1,146	149	1,294	149	1,443	149	1,592	149
RSA 5		80,443		86,921		92,835		98,748		104,360		108,911		112,584	
FILLMORE	GA	8,433	220	8,653	210	8,863	205	9,068	182	9,250	181	9,431	152	9,583	151
	NGA	2,050	5	2,055	25	2,080	0	2,080	10	2,090	9	2,099	10	2,109	9
PIRU	GA	715	5	720	0	720	0	720	5	725	5	730	5	735	5
	NGA	241	1	242	8	250	0	250	7	257	7	264	8	272	7
RSA 6		11,434		11,670		11,913		12,118		12,322		12,524		12,694	
AQMP PLANNING AREA		461,917		483,383		503,751		527,486		548,231		565,235		581,516	
NORTH HALF		405	12	417	12	429	12	441	12	453	11	464	12	476	12
VENTURA COUNTY TOTAL		463,816		484,120		506,180		527,927		548,684		565,697		581,992	

AREA		1984	+	1985	+	1986	+	1987	+	1988	+	1989	+	1990	1995	2000
OJAI	GA	20,148	40	20,188	134	20,322	134	20,456	74	20,530	74	20,644	74	20,738	21,208	21,678
	NGA	5,071	83	5,154	42	5,196	41	5,237	77	5,314	77	5,391	78	5,469	5,839	5,957
SAN BUENAVENTURA	GA	88,200	800	89,000	800	89,800	800	90,600	800	91,400	800	92,200	800	93,000	101,000	111,000
	NGA	1,845	59	1,904	45	1,949	45	1,994	45	2,039	46	2,085	45	2,130	2,335	2,580
SANTA PAULA	GA	22,601	94	22,695	401	23,096	401	23,497	334	23,831	335	24,166	334	24,500	25,350	26,090
	NGA	1,473	20	1,493	9	1,502	9	1,511	8	1,519	9	1,528	8	1,536	1,578	1,620
RSA 2		139,336		140,434		141,865		143,215		144,653		145,014		147,575	157,330	168,925
CAMARILLO	GA	57,842	1,158	59,000	1,691	60,691	1,691	62,392	1,692	64,074	1,693	65,767	1,692	67,459	74,494	79,650
	NGA	7,338	212	7,550	119	7,669	119	7,788	119	7,907	118	8,025	119	8,144	8,737	9,330
OXNARD	GA	126,750	3,750	130,500	3,600	134,100	3,600	137,700	3,600	141,300	3,600	144,900	3,600	148,500	158,100	183,250
	NGA	3,448	0	3,448	0	3,448	0	3,448	0	3,448	0	3,448	0	3,448	3,448	3,448
PORT HUENEME	GA	22,279	721	23,000	200	23,200	200	23,400	200	23,600	200	23,800	200	24,000	25,400	25,900
SILVERSTRAND*		2,481	61	2,542	0	2,542	0	2,542	0	2,542	0	2,542	0	2,542	2,542	2,542
RSA 3		220,139		226,040		231,650		237,250		242,871		248,492		254,093	273,577	305,120
MOORPARK	GA	18,740	2,260	21,000	1,125	22,125	1,125	23,250	750	24,000	750	24,750	750	25,500	27,750	30,000
	NGA	40	0	40	3	43	3	46	5	51	4	55	5	60	80	110
SIMI VALLEY	GA	88,700	2,500	91,200	1,950	93,150	1,950	95,100	2,633	97,733	2,634	100,367	2,633	103,000	112,000	122,000
	NGA	666	34	700	79	779	79	858	53	911	52	963	53	1,016	1,175	1,330
RSA 4		109,146		112,940		116,097		119,254		122,615		126,135		129,576	139,035	155,450
OAK PARK	GA	7,718	661	8,379	584	8,963	584	9,547	584	10,131	585	10,716	584	11,300	14,328	17,000
	NGA	122	17	139	14	153	14	167	9	176	10	186	9	195	225	250
THOUSAND OAKS	GA	106,615	2,285	108,900	1,275	110,175	1,275	111,450	1,650	113,100	1,650	114,750	1,650	116,400	124,900	144,900
	NGA	1,741	148	1,889	189	2,078	189	2,267	189	2,456	188	2,644	189	2,833	3,777	4,720
RSA 5		116,196		119,507		124,369		125,931		125,863		128,2[illegible]		130,728	148,228	164,870
FILLMORE	GA	9,734	152	9,886	253	10,139	253	10,392	253	10,645	252	10,897	253	11,150	12,050	12,450
	NGA	2,118	10	2,128	8	2,136	8	2,144	8	2,152	9	2,161	8	2,169	2,210	2,250
PIRU	GA	740	5	745	2	747	2	749	1	750	2	752	1	753	757	760
	NGA	279	7	286	7	293	7	300	5	305	4	309	5	314	327	340
RSA 6		12,871		13,045		13,315		13,585		13,852		14,119		14,386	15,344	16,300
AQMP PLANNING AREA		596,681		611,766		624,216		636,525		647,934		663,045		676,156	733,476	810,655
NORTH HALF		488	12	500	10	510	10	520	10	530	10	540	10	550	600	650
VENTURA COUNTY TOTAL		597,177		612,266		624,806		637,045		650,434		663,586		676,706	734,076	811,305

* NOT INCLUDED IN A GROWTH OR NON-GROWTH AREA PENDING LAFCO RESOLUTION.
SOURCE: 208 AREAWIDE WATER QUALITY MANAGEMENT PLAN: 1979-1980, SEPTEMBER 3, 1980 FOR 1977, 1985, 1987, 1990, 1995 AND 2000 FORECASTS, CITIES AND THE COUNTY OF VENTURA FOR 1978-1984, 1986, 1988 AND 1989 FORECASTS.

TABLE IV-2

ATTACHMENT "3"